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OPERATOR'S MANUAL



LOADALLS - SIDE ENGINE (TIER 2/3)

9821/6800-4 12/2018
ENGLISH

This manual should always stay with the machine

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Dear JCB Customer

Even if you have operated this type of equipment before, it is very important that your new machines operations and functions are explained to you by a JCB Dealer Representative following delivery of your new machine.

Following the installation you will know how to gain maximum productivity and performance from your new product.

Please contact your local JCB dealer if the Installation Form has not yet been completed with you.

Your Local JCB Dealer is:

OPERATOR MANUAL

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE

LOADALLS - SIDE ENGINE (TIER 2/3)

ENGLISH - 9821/6800 - ISSUE 4 - 12/2017

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Notes:

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Safety Notices

Important Information

T1-042

The Operator Manual

⚠ WARNING

You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator Manual. You must understand and follow the instructions in the Operator Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

INT-1-4-2

Do not operate the machine without an Operator Manual, or if there is anything on the machine you do not understand.

Treat the Operator Manual as part of the machine. Keep it clean and in good condition. Replace the Operator Manual immediately if it is lost, damaged or becomes unreadable.

Safety Warnings



This safety alert system identifies important safety messages in this manual. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

In this publication and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.

INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

INT-1-2-3

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Introduction

About This Manual

Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

- 531-70 from SN 1186000
- 533-105 from SN 1186000
- 535-95 from SN 1186000
- 535-125 HiViz from SN 1186000
- 535-140 HiViz from SN 1186000
- 540-140 HiViz from SN 1186000
- 536-60 from SN 1186000
- 536-70 from SN 1186000
- 540-140 from SN 1186000
- 540-170 from SN 1186000
- 540-200 from SN 1186000
- 541-70 from SN 1186000
- 550/560-80 from SN 1186000

Note: *This manual only applies to the above machines when they are fitted with the JCB Dieselmax Engine (SD, SE and SF Builds only).*

Using this Manual

T1-044

This manual is arranged to give you a good understanding of the machine and its safe operation. It also contains maintenance information and specification data. Read this manual from front to back before using the machine for the first time. Particular attention must be given to all the safety aspects of operating and maintaining the machine.

If there is anything you are not sure about, ask your JCB distributor or employer. Do not guess, you or others could be killed or seriously injured.

General warnings in this chapter are repeated throughout the book, as well as specific warnings. Read all the safety statements regularly, so you do not forget them. Remember that the best operators are the safest operators.

The illustrations in this manual are for guidance only. Where the machines differ, the text and or the illustration will specify.

This manual contains original instructions, verified by the manufacturer (or their authorised representative).

The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this publication.

All optional equipment included in this manual may not be available in all territories.

Left Side, Right Side

In this manual, 'left' **A** and 'right' **B** mean your left and right when you are seated correctly in the machine.

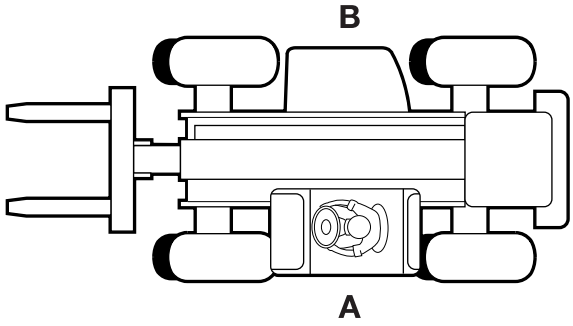


Fig 1.

Cab/Canopy

T1-003_2

This manual frequently makes references to the cab. For instance, 'do not operate the machine without a manual in the cab'. It should be noted that these statements also apply to canopy build machines.

Cross References

T1-004_2

In this publication, page cross references are made by presenting the subject title printed in bold, italic and underlined. It is preceeded by the 'go to' symbol. The number of the page upon which the subject begins, is indicated within the brackets. For example: ***⇨ Cross References (3)***.

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Machine Description

The JCB Loadall

P5-1001-2

Self propelled, seated operator, wheeled machine for operation on unimproved natural terrain and disturbed terrain. A main structural support is designed to carry an extending boom with a carriage mounted on the front to which forks or an approved attachment can be fitted.

When used normally the machine lifts and places loads by extending/retracting, raising/lowering the boom.

Intended Use

The machine is intended to be used under normal conditions for the applications described in this manual. If the machine is used for other purposes or in dangerous environments, for example in a flammable atmosphere or in areas with dust containing asbestos, special safety regulations must be followed and the machine must be equipped for use in these environments.

Component Location

Note: *The illustration(s) show a typical machine model; your machine may look different from the model shown.*

1 Boom
2 Carriage
3 ROPS/FOPS Cab
4 Auxiliary Circuit Quick Release Couplings (QRC)
5 Engine Cover
6 Hydraulic Tank
7 Fuel Tank
8 Battery
9 Hydraulic Tow Hitch (Option)
10 Mechanical Tow Hitch (Option)
11 Isolator Key

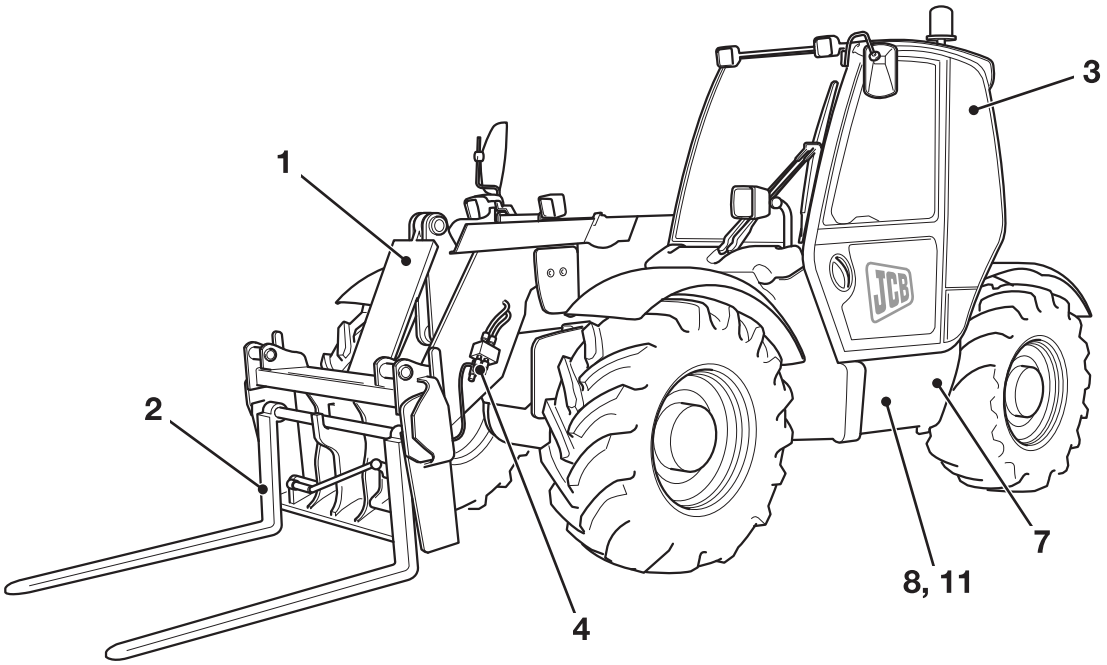


Fig 2.

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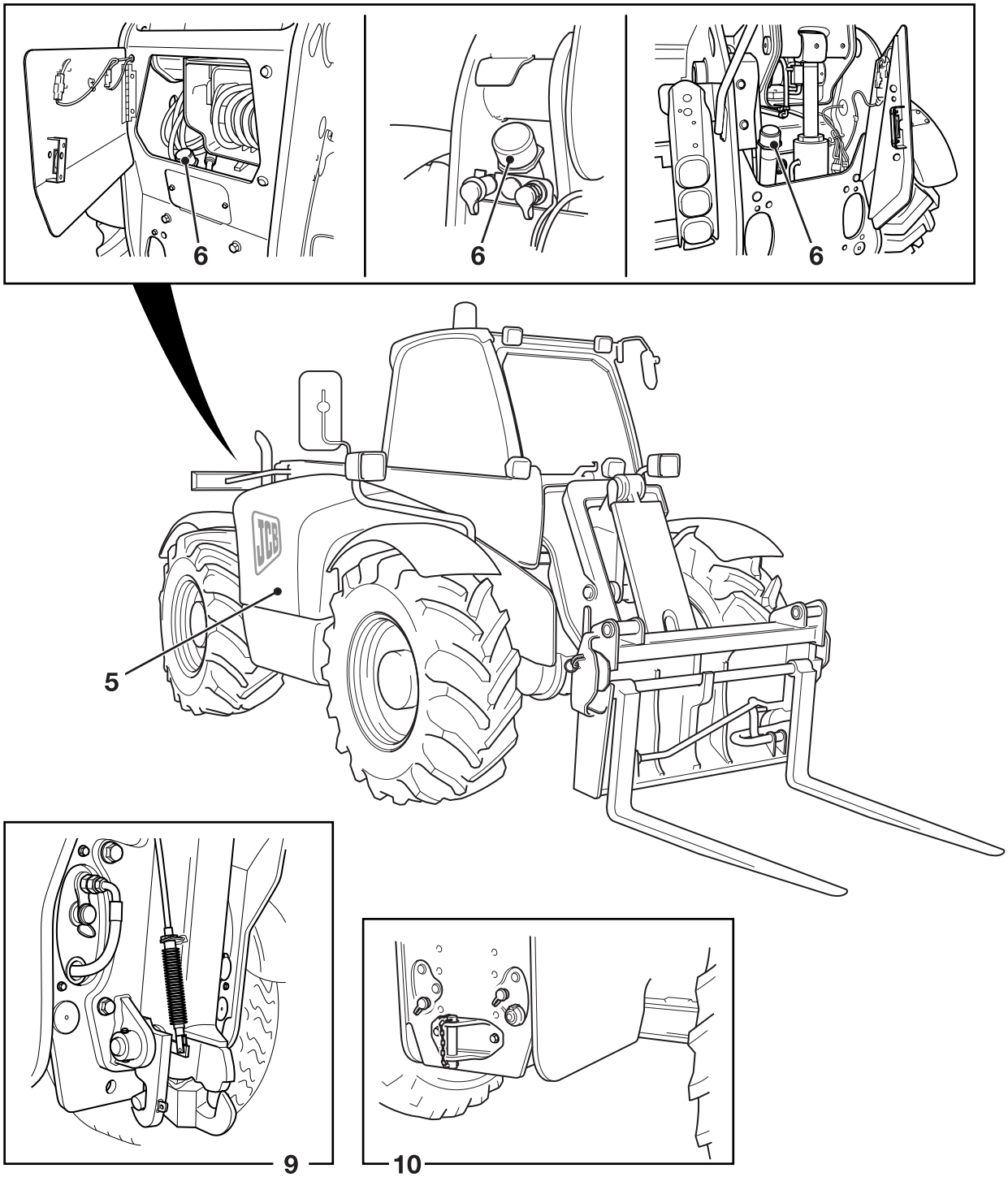


Fig 3.

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Safety Check List

P5-1010_3

Safety - Yours and Others

INT-1-3-1_3

All machinery can be hazardous. When a machine is correctly operated and properly maintained, it is a safe machine to work with. But when it is carelessly operated or poorly maintained it can become a danger to you (the operator) and others.

In this manual and on the machine you will find warning messages. Read and understand them. They tell you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB distributor to explain them.

But safety is not just a matter of responding to the warnings. All the time you are working on or with the machine you must be thinking what hazards there might be and how to avoid them.

Do not work with the machine until you are sure that you can control it.

Do not start any job until you are sure that you and those around you will be safe.

If you are unsure of anything, about the machine or the job, ask someone who knows. Do not assume anything.

Remember

BE CAREFUL
BE ALERT
BE SAFE

General Safety

T1-043

⚠ WARNING

To operate the machine safely you must know the machine and have the skill to use it. You must abide by all relevant laws, health and safety regulations that apply to the country you are operating in. The Operator Manual instructs you on the machine, its controls and its safe operation; it is not a training manual. If you are a new operator, get yourself trained in the skills of using a machine before trying to work with it. If you don't, you will not do your job well, and you will be a danger to yourself and others.

INT-1-4-1

⚠ WARNING

Care and Alertness

All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be alert for hazards.

INT-1-3-5

⚠ WARNING

Clothing

You can be injured if you do not wear the proper clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are: a hard hat, safety shoes, safety glasses, a well fitting overall, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained. Remove rings, watches and personal jewellery.

INT-1-3-6_2

⚠ WARNING

Alcohol and Drugs

It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or while operating the machine or attachments. Be aware of medicines which can cause drowsiness.

INT-1-3-9_2

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⚠ WARNING

Feeling Unwell

Do not attempt to operate the machine if you are feeling unwell. By doing so you could be a danger to yourself and those you work with.

8-1-2-4

⚠ WARNING

Mobile Phones

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

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

INT-3-3-9

⚠ WARNING

Lifting Equipment

You can be injured if you use incorrect or faulty lifting equipment. You must identify the weight of the item to be lifted then choose lifting equipment that is strong enough and suitable for the job. Make sure that lifting equipment is in good condition and complies with all local regulations.

INT-1-3-7_2

⚠ WARNING

Raised Equipment

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

Make sure that no-one goes near the machine while you install or remove the mechanical device.

13-2-3-7_3

⚠ WARNING

Raised Machine

NEVER position yourself or any part of your body under a raised machine which is not properly supported. If the machine moves unexpectedly you could become trapped and suffer serious injury or be killed.

INT-3-3-7_1

⚠ DANGER

Lightning

Lightning can kill you. Do not use the machine if there is lightning in your area.

5-1-1-2

⚠ WARNING

Machine Modifications

This machine is manufactured in compliance with legislative and other requirements. It should not be altered in any way which could affect or invalidate any of these requirements. For advice consult your JCB Distributor.

INT-1-3-10_2

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Operating Safety

⚠ WARNING

Machine Condition

A defective machine can injure you or others. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this manual are completed before using the machine.

INT-2-1-2_2

⚠ WARNING

Machine Limits

Operating the machine beyond its design limits can damage the machine, it can also be dangerous. Do not operate the machine outside its limits. Do not try to upgrade the machine performance with unapproved modifications.

INT-2-1-4

⚠ WARNING

Engine/Steering Failure

If the engine or steering fails, stop the machine as quickly as possible. Do not operate the machine until the fault has been corrected.

INT-2-1-5

⚠ WARNING

Exhaust Gases

Breathing the machine exhaust gases can harm and possibly kill you. Do not operate the machine in closed spaces without making sure there is good ventilation. If possible, fit an exhaust extension. If you begin to feel drowsy, stop the machine at once and get into fresh air.

INT-2-1-10_2

⚠ WARNING

Work Sites

Work sites can be hazardous. Inspect the site before working on it. You could be killed or injured if the ground gives way under your machine or if piled material collapses onto it. Check for potholes and hidden debris, logs, ironwork etc. Any of these could cause you to lose control of your machine. Check for utilities such as electric cables (overhead and underground), gas and water pipes etc. Mark the positions of the underground cables and pipes. Make sure that you have enough clearance beneath overhead cables and structures.

INT-2-2-1_2

⚠ WARNING

Communications

Bad communications can cause accidents. Keep people around you informed of what you will be doing. If you will be working with other people, make sure any hand signals that may be used are understood by everybody. Work sites can be noisy, do not rely on spoken commands.

INT-2-2-3

⚠ WARNING

Parking

An incorrectly parked machine can move without an operator. Follow the instructions in the Operator Manual to park the machine correctly.

INT-2-2-4_2

⚠ WARNING

Banks and Trenches

Banked material and trenches can collapse. Do not work or drive too close to banks and trenches where there is danger of collapse.

INT-2-2-5

⚠ WARNING

Safety Barriers

Unguarded machines in public places can be dangerous. In public places, or where your visibility is reduced, place barriers around the work area to keep people away.

INT-2-2-8

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⚠ DANGER

Sparks

Explosions and fire can be caused by sparks from the exhaust or the electrical system. Do not use the machine in closed areas where there is flammable material, vapour or dust.

INT-2-2-10

⚠ WARNING

Hazardous Atmospheres

This machine is designed for use in normal out door atmospheric conditions. It should not be used in an enclosed area without adequate ventilation. Do not use the machine in a potentially explosive atmosphere, i.e. combustible vapours, gas or dust, without first consulting your JCB Distributor.

INT-2-1-14

⚠ CAUTION

Regulations

Obey all laws, work site and local regulations which affect you and your machine.

INT-1-3-3

⚠ WARNING

Practice

You or others can be killed or seriously injured if you do unfamiliar operations without first practising them. Practise away from the work site on a clear area. Keep other people away. Do not perform new operations until you are sure you can do them safely.

INT-2-1-1

⚠ 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

⚠ WARNING

Keep the machine controls clean and dry. Your hands and feet could slide off slippery controls. If that happens you could lose control of the machine.

2-2-3-6

⚠ WARNING

Electrical Power Cables

You could be electrocuted or badly burned if you get the machine or its attachments too close to electrical power cables.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near electric power lines.

Before you start using the machine, check with your electricity supplier if there are any buried power cables on the site.

There is a minimum clearance required for working beneath overhead power cables. You must obtain details from your local electricity supplier.

2-2-5-4

⚠ CAUTION

If you have an attachment which is not covered in the Operator Manual do not install it, use it or remove it until you have obtained, read and understood the pertinent information. Install attachments only on the machines for which they were designed.

5-5-1-1_2

⚠ WARNING

Use only the JCB approved attachments that are specified for your machine. Operating with non-specified attachments can overload the machine, causing possible damage and machine instability which could result in injury to yourself or others.

The use of non-approved attachments could invalidate your warranty.

2-4-5-2_1

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⚠ DANGER

Working Platform

Using the machine as a working platform is hazardous; you can fall off and be killed or injured. Never use the machine as a working platform.

5-1-5-9

⚠ WARNING

Machine Safety

Stop work at once if a fault develops. Abnormal sounds and smells can be signs of trouble. Inspect and repair before resuming work.

8-1-2-3

⚠ 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

⚠ WARNING

Travelling at High Speeds

Travelling at high speeds can cause accidents. Do not reverse in a high gear with full throttle. Always travel at a safe speed to suit working conditions.

INT-5-3-3

⚠ 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

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

⚠ CAUTION

Fork Spacing

Loads can fall off incorrectly spaced forks. Always space the forks correctly for the load. Make sure the forks are completely under the load before lifting.

5-1-4-2

⚠ CAUTION

One-Fork Lifting

A load lifted on one fork can slip off. Never lift a load with one fork.

5-1-4-3

⚠ CAUTION

Unloading

Never unload the forks by stopping the machine suddenly. Follow the procedures in the Operator Manual for unloading.

5-1-4-4_2

⚠ CAUTION

Uneven Ground

Loads stacked on uneven ground can topple. Never stack loads on uneven ground.

5-1-4-5

⚠ WARNING

Scaffolding

Overloaded scaffolding can collapse. Never load scaffolding beyond the regulation capacity.

5-1-4-6

⚠ CAUTION

Overhead Clearance

A raised boom can strike overhead objects. Always check for overhead clearance before raising the boom.

5-1-5-1

⚠ WARNING

Boom/Machine Travel

Operating the boom while you travel can cause accidents. You will not have total control of the machine. Never operate the boom when you travel.

5-1-5-2_2

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⚠ DANGER

Forks/Working Platform

Using the forks alone as a working platform is hazardous; you can fall off and be killed or injured. Never use the forks as a working platform.

5-1-5-3

⚠ WARNING

Forks/Turning

The forks project in front of the machine. Make sure there is enough clearance for the forks when making turns.

5-1-5-4_2

⚠ WARNING

High Loads

A high load can block your view and reduce the machine's stability. Travel with the load low to the ground. Travel slowly and with caution over rough, muddy or loose surfaces.

5-1-3-2

⚠ WARNING

Slopes

When transporting a load on a slope, drive slowly and keep the load uphill of the machine. This will increase stability.

5-1-4-1

⚠ WARNING

Hillsides

Operating the machine on hillsides can be dangerous if proper precautions are not taken. Ground conditions can be changed by rain, snow, ice etc. Check the site carefully. Operate in first gear on hillsides, when applicable, keep all attachments low to the ground. Never coast down a hill with the engine off or the transmission in neutral.

INT-2-2-7

⚠ WARNING

Visibility

Accidents can be caused by working in poor visibility. Use your lights to improve visibility. Keep the road lights, windows and mirrors clean.

Do not operate the machine if you cannot see clearly.

5-1-4-7

⚠ WARNING

Keep Your Hands and Feet Inside the Vehicle

When using the machine, keep your hands and feet clear of moving parts. Keep your hands and feet within the operator compartment while the vehicle is in motion.

13-1-1-17

⚠ WARNING

Controls

You or others can be killed or seriously injured if you operate the control levers from outside the machine. Operate the control levers only when you are correctly seated.

0179_2

⚠ CAUTION

Passengers

Passengers in or on the machine can cause accidents. Do not carry passengers.

INT-2-2-2_1

⚠ WARNING

Fires

If your machine is equipped with a fire extinguisher, make sure it is checked regularly. Keep it in the correct machine location until you need to use it.

Do not use water to put out a machine fire, you could spread an oil fire or get a shock from an electrical fire. Use carbon dioxide, dry chemical or foam extinguishers. Contact your nearest fire department as quickly as possible. Firefighters should use self-contained breathing apparatus.

INT-3-2-7_2

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⚠ WARNING

Should the machine start to roll over, you can be crushed if you try to leave the cab. If the machine starts to roll over, do not try and jump from the cab. Stay in the cab, with your seat belt fastened.

INT-2-1-12

Maintenance Safety

⚠ WARNING

Communications

Bad communications can cause accidents. If two or more people are working on the machine, make sure each is aware of what the others are doing. Before starting the engine make sure the others are clear of the danger areas; examples of danger areas are: the rotating blades and belt on the engine, the attachments and linkages, and anywhere beneath or behind the machine. People can be killed or injured if these precautions are not taken.

INT-3-1-5

⚠ WARNING

Repairs

If your machine does not function correctly in any way, get it repaired straight away. Neglect of necessary repairs could result in an accident or affect your health. Do not try to do repairs or any other type of maintenance work you do not understand. To avoid injury and/or damage get the work done by a specialist engineer.

GEN-1-5_2

⚠ WARNING

Metal Splinters

You can be injured by flying metal splinters when driving metal pins in or out. Use a soft faced hammer or copper pin to remove and fit metal pins. Always wear safety glasses.

INT-3-1-3_2

⚠ 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

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⚠ 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

⚠ 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

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

⚠ 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

⚠ WARNING

Soft Ground

A machine can sink into soft ground. Never work under a machine on soft ground.

INT-3-2-4

⚠ WARNING

Always wear safety glasses when dismantling assemblies containing components under pressure from springs. This will protect against eye injury from components accidentally flying out.

GEN-6-2

⚠ CAUTION

Rams

The efficiency of the rams will be affected if they are not kept free of solidified dirt. Clean dirt from around the rams regularly. When leaving or parking the machine, close all rams if possible to reduce the risk of weather corrosion.

INT-3-2-10

⚠ CAUTION

Cleaning

Cleaning metal parts with incorrect solvents can cause corrosion. Use only recommended cleaning agents and solvents.

INT-3-2-11

⚠ WARNING

When using cleaning agents, solvents or other chemicals, you must adhere to the manufacturer's instructions and safety precautions.

GEN-1-9

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⚠ CAUTION

'O' rings, Seals and Gaskets

Badly fitted, damaged or rotted 'O' rings, seals and gaskets can cause leakages and possible accidents. Renew whenever disturbed unless otherwise instructed. Do not use Triochloroethane or paint thinners near 'O' rings and seals.

INT-3-2-12

⚠ 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

⚠ 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

⚠ WARNING

Working Under the Machine

Make the machine safe before getting beneath it. Ensure that any fitments on the machine are secure; engage the park brake, remove the starter key, disconnect the battery.

INT-3-3-8_2

⚠ WARNING

Certain seals and gaskets (e.g. crankshaft oil seal) on JCB machines contain fluoroelastomeric materials such as Viton, Fluorel and Technoflon. Fluoroelastomeric materials subjected to high temperatures can produce highly corrosive hydrofluoric acid. THIS ACID CAN SEVERELY BURN.

New fluoroelastomeric components at ambient temperature require no special safety precautions.

Used fluoroelastomeric components whose temperatures have not exceeded 300°C (572°F) require no special safety precautions. If evidence of decomposition (e.g. charring) is found, refer to the next paragraph for safety instructions DO NOT TOUCH COMPONENT OR SURROUNDING AREA.

Used fluoroelastomeric components subjected to temperatures greater than 300°C (572°F) (e.g. engine fire) must be treated using the following safety procedure. Make sure that heavy duty gloves and special safety glasses are worn:

1 **Thoroughly wash contaminated area with 10% calcium hydroxide or other suitable alkali solution, if necessary use wire wool to remove burnt remains.**

2 **Thoroughly wash contaminated area with detergent and water.**

3 **Contain all removed material, gloves etc. used in this operation in sealed plastic bags and dispose of in accordance with Local Authority Regulations.**

DO NOT BURN FLUOROELASTOMERIC MATERIALS.

INT-3-3-5_3

⚠ WARNING

Protect your eyes when grinding metal. Wear safety glasses or goggles. Remove or protect any combustible materials from the area which could be ignited by sparks.

GEN-1-12

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⚠ 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

Arc Welding

To prevent the possibility of damage to electronic components, disconnect the battery and the alternator before arc-welding on the machine or attached implements.

If the machine is equipped with sensitive electrical equipment, i.e. amplifier drivers, electronic control units (E.C.U.s), monitor displays, etc., then disconnect them before welding. Failure to disconnect the sensitive electrical equipment could result in irreparable damage to these components.

Parts of the machine are made from cast iron; welds on cast iron can weaken the structure and break. Do not weld cast iron. Do not connect the welder cable or apply any weld to any part of the engine.

Always connect the welder earth (ground) cable to the same component that is being welded, i.e. boom or dipper, to avoid damage to pivot pins, bearings and bushes. Attach the welder earth (ground) cable no more than 0.6 metres (2 feet) from the part being welded.

INT-3-1-15_2

⚠ WARNING

Counterweights

Your machine may be fitted with counterweights. They are extremely heavy. Do not attempt to remove them.

INT-3-2-5

⚠ WARNING

Compressed air is dangerous. Wear suitable eye protection and gloves. Never point a compressed air jet at yourself or others.

0147_1

⚠ WARNING

Accumulators

The accumulators contain hydraulic fluid and gas at high pressure. Prior to any work being carried out on systems incorporating accumulators, the system pressure must be exhausted by a JCB distributor, as the sudden release of the hydraulic fluid or gas may cause injury.

INT-3-1-17

⚠ WARNING

Petrol

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

INT-3-1-6

⚠ CAUTION

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

INT-3-1-14

⚠ WARNING

If you try to charge a frozen battery, or jump start and run the engine, the battery could explode. Do not use a battery if its electrolyte is frozen. To prevent the battery electrolyte from freezing, keep the battery at full charge.

0125

⚠ 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

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⚠ 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

⚠ WARNING

Battery Terminals

The machine is negatively earthed. Always connect the negative pole of the battery to earth.

When connecting the battery, connect the earth (-) lead last.

When disconnecting the battery, disconnect the earth (-) lead first.

INT-3-1-9

⚠ WARNING

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

2-3-2-7_2

⚠ WARNING

Jacking

A machine can roll off jacks and crush you unless the wheels have been blocked. Always block the wheels at the opposite end of the machine that is to be jacked. Do not work underneath a machine supported only by jacks. Always support a jacked-up machine on axle stands before working underneath it.

INT-3-2-8

⚠ WARNING

Under no circumstances must the engine be run with the transmission in gear and only one driving wheel jacked clear of the ground, since the wheel on the ground will move the machine.

INT-3-1-16

⚠ 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

⚠ WARNING

Asbestos

Asbestos dust can damage your lungs. Some engine gaskets contain asbestos. Do not dismantle the engine or exhaust system; get these jobs done by a qualified person who has a copy of the engine service manual.

5-1-6-1

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Safety Labels

Introduction

T1-014_2

⚠ WARNING

Safety Labels

Safety labels on the machine warn you of particular hazards. You can be injured if you do not obey the safety instructions shown.

INT-1-3-11

Safety labels are strategically placed around the machine to remind you of possible hazards.

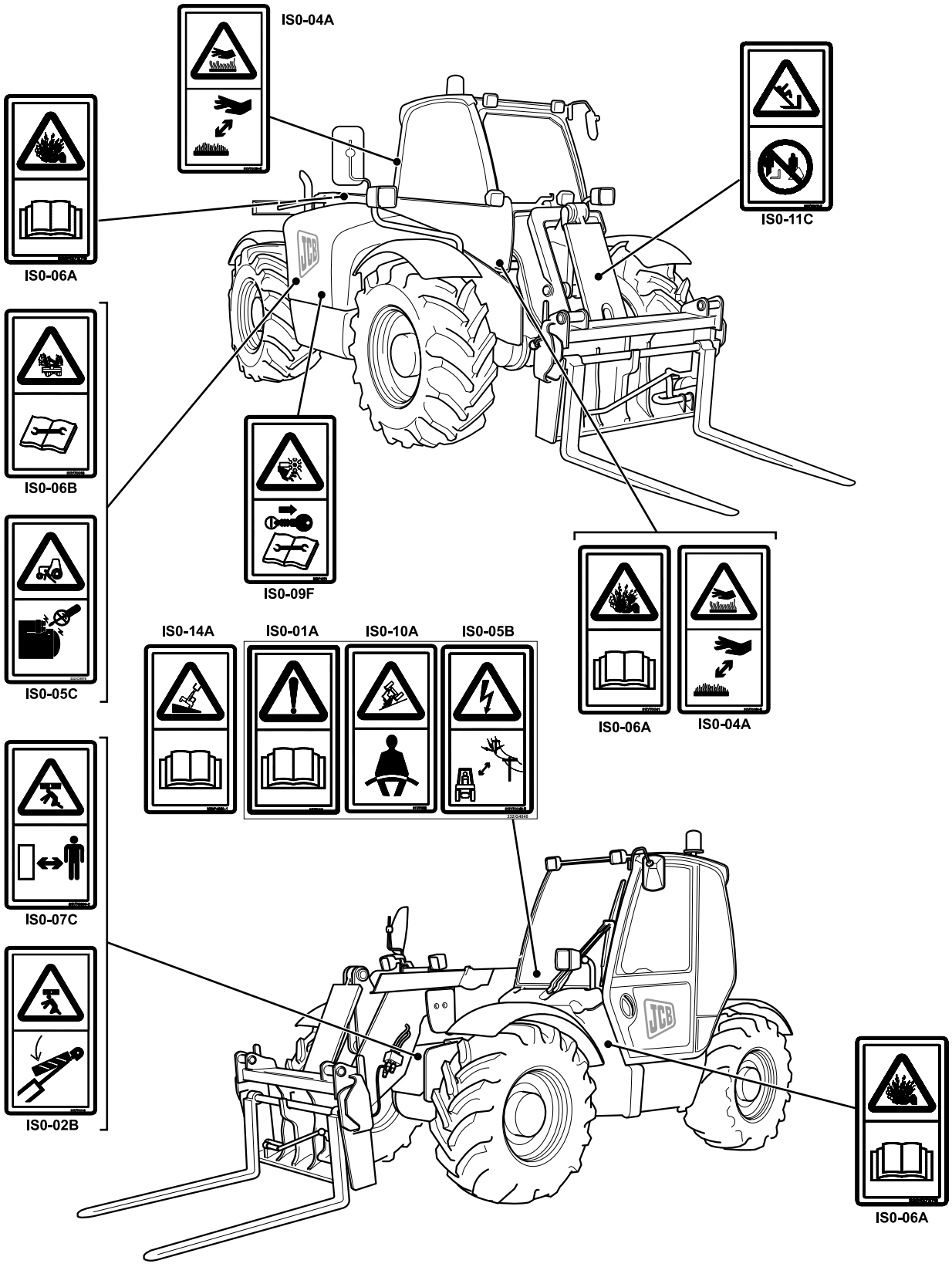
If you need eye-glasses for reading, make sure you wear them when reading the safety labels. Do not over-stretch or place yourself in dangerous positions to read the safety labels. If you do not understand the hazard shown on the safety label, then refer to ***Safety Label Identification***.

Note: *The illustration(s) show a typical machine model. Your machine may look different from the model shown.*

Keep all safety labels clean and readable. Replace lost or damaged safety labels. Make sure replacement parts include safety labels where necessary. Each safety label has a part number printed on it, use this number to order a new safety label from your JCB distributor.

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Safety Label Identification



802810-4-C2

Fig 4. Safety Label Locations

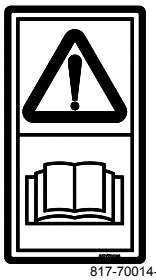
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Part Numbers and Descriptions

ISO-01A

Part Number: 332/G4040

Description: Warning. Read the operator manual before you operate the machine.



817-70014-3

ISO-02B

Part Number: 817/70010

Description: Crushing of whole body. Install the maintenance strut before you start maintenance work below a raised attachment. Refer to ***Making the Machine Safe (Routine Maintenance Section)***.



817-70010-2

ISO-04A

Part Number: 817/70004

Description: Burns to fingers and hands. Stay a safe distance away.



817-70004-4

ISO-05B

Part Number: 332/G4040

Description: Electrical hazard. Keep a safe distance away from power lines.



817-70040-2

ISO-05C

Part Number: 332/C9978

Description: Runover. Start the engine from the operator seat only. Do not short across the terminals.



332-C9978-1

ISO-06A

Part Number: 332-F5855

Description: Pressure hazard. Read operators manual

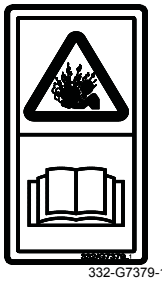


332-F5855-1

ISO-06A

Part Number: 332-G7379

Description: Pressure hazard. Read operators manual



332-G7379-1

ISO-06B

Part Number: 332-F5860

Description: Pressure hazard. Refer to ***Cooling System (Routine Maintenance Section)***.



332-F5860-1

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ISO-07C

Part Number: 817/70008

Description: Crushing of whole body. Keep a safe distance from the machine.



817-70008-2

ISO-09F

Part Number: 332/P4679

Description: Severing of hands or fingers. Keep clear of/do not reach into the moving parts. Stop the engine and remove the starter key before you start maintenance work. Refer to ***Making the Machine Safe (Routine Maintenance Section)***.



332-P4679-1

ISO-10A

Part Number: 332/G4040

Description: Crush hazard. Wear the seatbelt when you operate the machine.



817-70029-3

ISO-011C

Part Number: 817/70011

Description: Fall from raised attachment. Do not stand/ride on the bucket or forks.

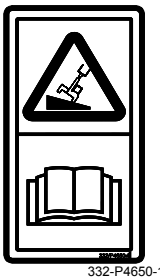


817-70011-2

ISO-14A

Part Number: 332-P4650

Description: Stability hazard. Refer to ***Working with the Machine (Operation Section)***.



332-P4650-1

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Identifying Your Machine

Machine Identification Plate

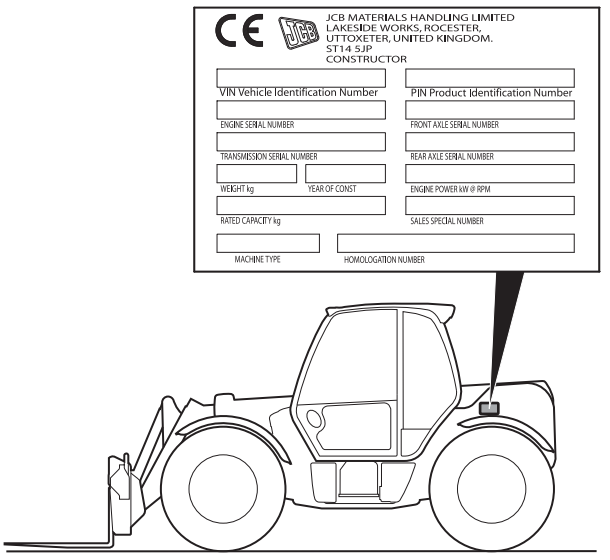
Your machine has an identification plate mounted as shown. The serial numbers of the machine and its major units are shown on the plate.

Note: *The machine model and build specification is indicated by the PIN. Refer to* ***Typical Product Identification Number (PIN)****.*

The serial number of each major unit is also shown on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either get a replacement identification plate from your JCB Dealer or simply remove the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.

Note: *The machine identification plate fitted to European Tractor Type Approved Builds is different to the one shown.* ***⇨ European Tractor Type Approved Builds (26)****.*

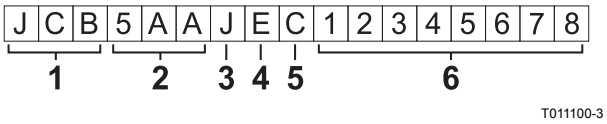


420811-4

Fig 5.

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Typical Product Identification Number (PIN)



T011100-3

1 World Manufacturer Identification (3 Digits)

2 Machine Model (3 Digits)

Standard Builds:

5AA = 531-70	5AK = 535-140
5AB = 535-95	5AL = 540-140
5AC = 536-60	5AN = 535-125 HiViz
5AD = 541-70	5AP = 535-140 HiViz
5AF = 540-170	5AR = 536-70
5AH = 533-105	5AW = 550-80
5AJ = 535-125	5AX = 540-200
5A8 = 540-140 HiViz	5AY = 560-80

European Tractor Type Approved Builds:

5TA = 531-70	5TD = 535-95
5TB = 541-70	5TE = 536-70
5TC = 536-60	5TW = 550-80

3 Engine Type (1 Digit)

JCB Dieselmax (Tier 2):

J = Naturally Aspirated, 63kW (84.5Hp)

K = Turbocharged, 74.2kW (100Hp)

L = Turbocharged and Intercooled, 93kW (125Hp)

JCB Dieselmax (Tier 3):

R = Turbocharged and after-cooled, 97kW (130Hp)

S = Turbocharged, 74.2kW (100Hp)

T = Turbocharged, 63kW (85Hp)

V = Turbocharged and after-cooled, 108 kW (145Hp)

4 Gearbox Model (1 Digit)

E = 3 Speed (PS750)	J = 6 Speed (PS760)
F = 3 Speed (PS760)	M = 4 Speed (SS700)
G = 4 Speed (PS750)	N = 4 Speed (PS750)
H = 4 Speed (PS760)	

5 Check Letter (1 Digit)

The Check Letter is used to verify the authenticity of the machine's PIN.

6 Machine Serial Number (8 Digits)

Each machine has a unique serial number.

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Component Identification Plates

Typical Engine Identification Number

T1-005_3

Engine data labels **A** are located on the cylinder block at position **C** and rocker cover **D** (if fitted). ⇒ *Fig 6. (🗋 23)*. The data label contains important engine information and includes the engine identification number **E**.

A typical engine identification number is explained as follows:

SA	320/40001	U	00001	04
1	2	3	4	5

1 Engine Type

S = 4.4 litre series.

JCB Dieselmax (Tier 2)

A = Naturally aspirated

B = Turbocharged

C = Turbocharged and intercooled

JCB Dieselmax (Tier 3)

D = Turbocharged

E = Electronic common rail fuel injection

F = Turbocharged and after-cooled

2 Engine part number

3 Country of manufacture

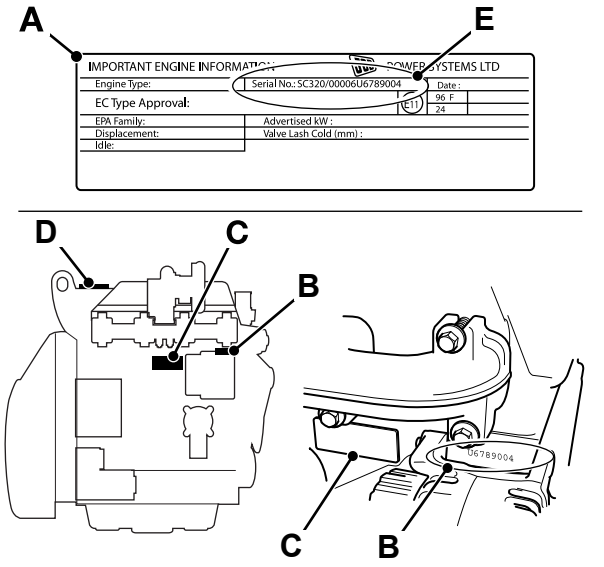
U = United Kingdom

4 Engine Serial Number

5 Year of Manufacture

The last three parts of the engine identification number are stamped on the cylinder block at position **B**.

U 00001 04



C007820-C2

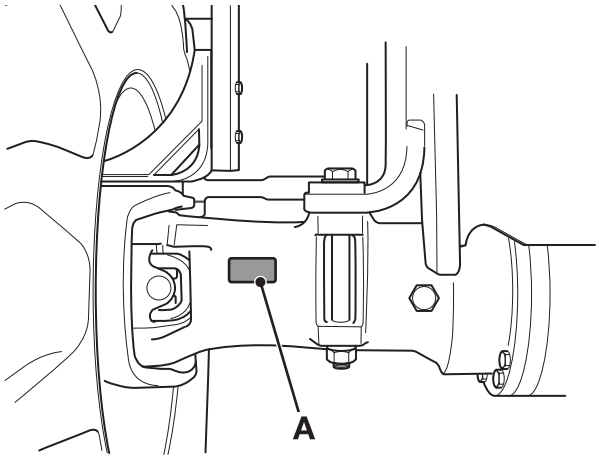
Fig 6. Engine

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Transmission Identification Numbers

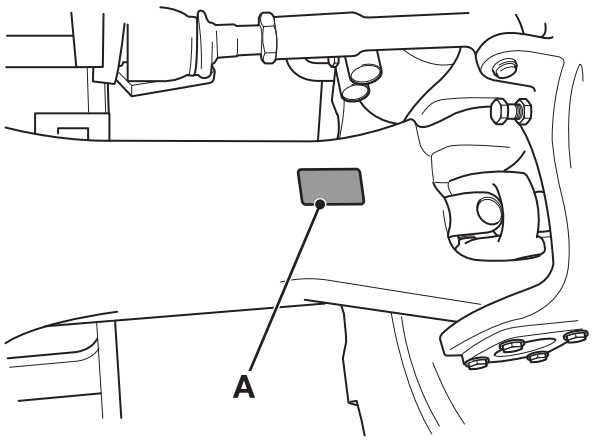
Axles (Excluding 550/560-80 Machines)

The axles have a serial number stamped on a data plate label **A** as shown.



A710830-1

Fig 7. Front Axle



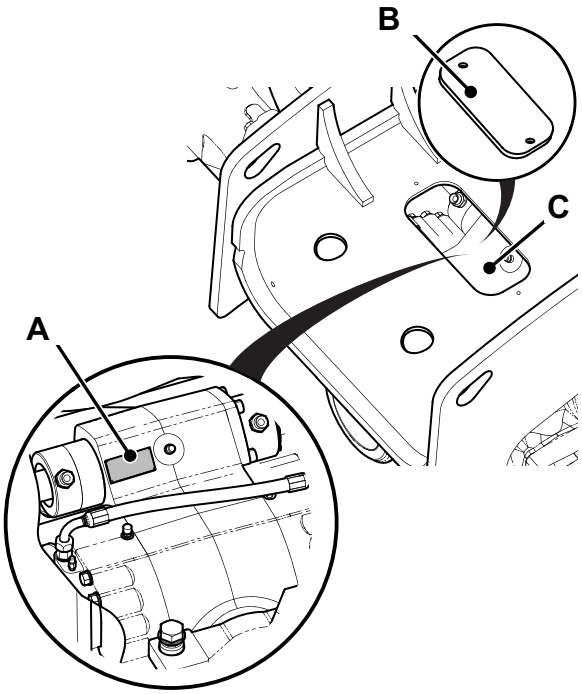
A710840-1

Fig 8. Rear Axle

Axles (550/560-80 Machines)

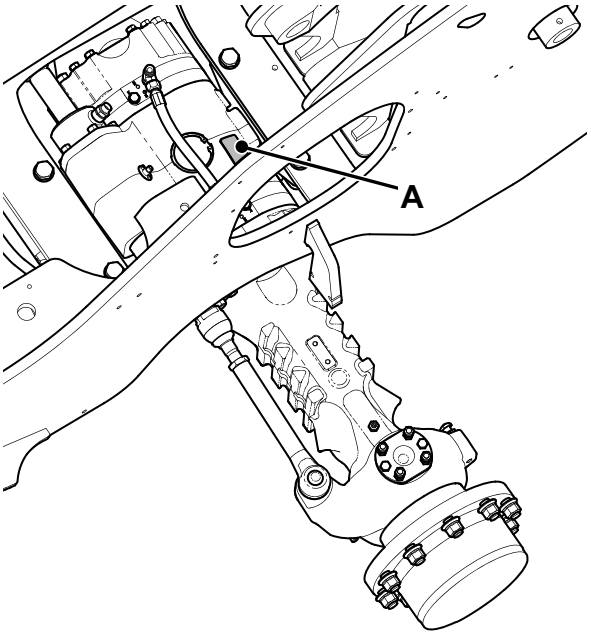
The axles have a serial number stamped on a data plate label **A** as shown.

To view to the front axle data plate remove the cover **B** and the plate will be visible through hole **C**.



C107510

Fig 9. Front Axle



C107520

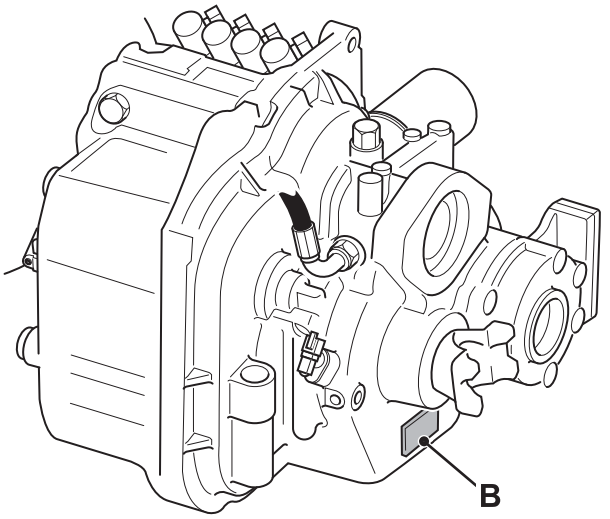
Fig 10. Rear Axle

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Gearbox

P5-1008

The gearbox has a serial number stamped on a data plate label **B** as shown.

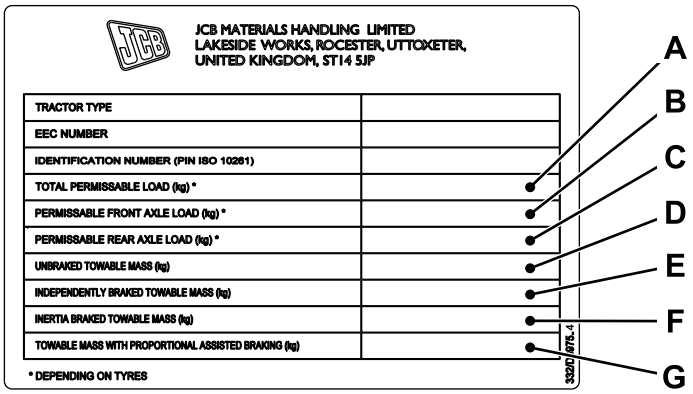


A401030-1

Fig 11. Powershift Transmission

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European Tractor Type Approved Builds



332-d6975-4

Fig 12.

Table 1.

Item		531-70	535-95	536-60	536-70	541-70	550-80
		kg (lb)	kg (lb)	kg (lb)	kg (lb)	kg (lb)	kg (lb)
A	Total Permissible Mass	8200 (18073)	8500 (18734)	8200 (18073)	8350 (18403)	8400 (18513)	-
B	Permissible Front Axle Load(1)						
	From	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	-
	To	6600 (14550)	7300 (16093)	6200 (13668)	7000 (15432)	7000 (15432)	-
C	Permissible Rear Axle Load(1)						
	From	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	2400 (5291)	-
	To	6600 (14550)	7300 (16093)	6200 (13668)	7000 (15432)	7000 (15432)	-
D	Unbraked Towable Mass	750 (1653)	750 (1653)	750 (1653)	750 (1653)	750 (1653)	-
E	Independently Braked Towable Mass	6000 (13227)	6000 (13227)	6000 (13227)	6000 (13227)	6000 (13227)	-
F	Inertia Braked Towable Mass	3500 (7716)	3500 (7716)	3500 (7716)	3500 (7716)	3500 (7716)	-
G	Towable Mass Fitted with a Proportional Assisted Braking System						
	10 Tonne Hydraulic Hitch	10000 (22040)	10000 (22040)	10000 (22040)	10000 (22040)	10000 (22040)	-
	Rockinger/Tractor Hitch	17800 (39231)	17100 (37699)	17800 (39231)	17250 (38019)	17200 (37909)	-

(1) Dependent on tyres option.

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ROPS/FOPS and OECD Certification Plates

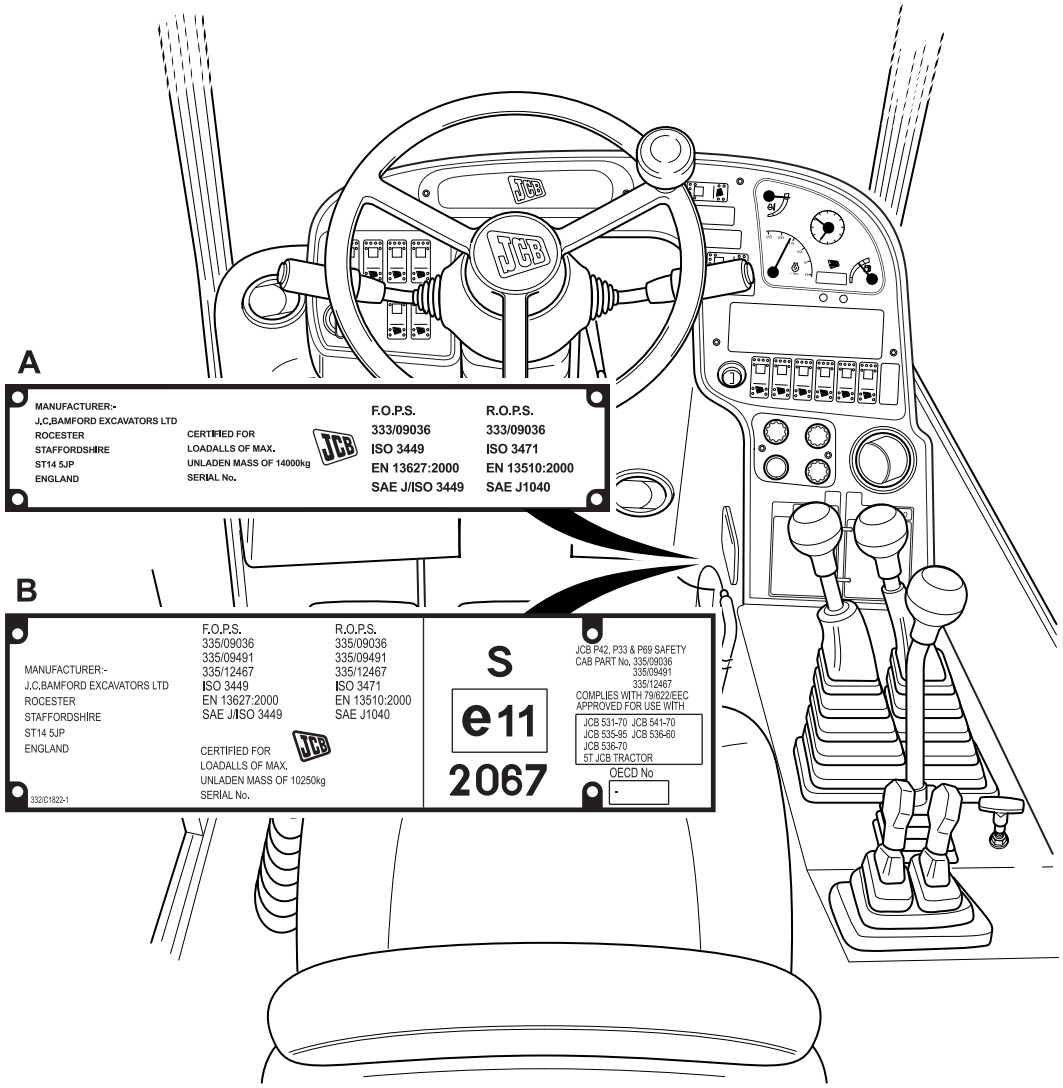


Fig 13.

Machines built to ROPS/FOPS standards have an identification label fitted to the inside of the cab. Refer to example **A**.

Machines built to ROPS/FOPS and OECD standards have an identification label fitted to the inside of the cab. Refer to example **B**.

Definition of terms:

ROPS	Roll Over Protection Structure
FOPS	Falling Objects Protection Structure
OECD	Organisation for Economic Co-operation and Development.

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Machine Security

Introduction

T1-019

Vandalism and theft of unattended machines is an ever increasing problem and JCB is doing everything possible to help combat this.

Your JCB Distributor or Dealer will be pleased to provide information on any of these sensible precautions. ACT NOW!

JCB Plantguard

JCB PLANTGUARD is a comprehensive package available to help you safeguard your machine. It includes such devices as vandal proof covers, window etching, immobiliser, concealed serial number, battery isolator, Tracker security system and much more.

Remember that the fitting of any one of these security devices will help to minimise not only the damage or loss of your machine but also subsequent lost productivity. It could also result in reduced insurance premiums.

Construction Equipment Security And Registration Scheme (CESAR)

T1-020

JCB are pleased to announce, the availability of CESAR a simple, effective method of machine identification and registration that operates throughout the United Kingdom and Ireland and across the whole spectrum of JCB products.

CESAR is a scheme to help reduce plant theft, and was developed by the Metropolitan Police and the Home Office Plant Theft Action Group.

The key to the scheme is its simplicity and will mean that every police officer in the country will know how to identify construction machinery and verify ownership. This will provide a major leap forward in both protecting machinery, and recovering it.

The Construction Equipment Association is managing the scheme, and Datatag are providing the security material and support. JCB is fully supportive of the CESAR initiative and will offer it as a factory fit option across the range.

The CESAR kit includes 2 Tamper proof triangular ID plates fitted on either side of the machine, a unique transponder, mini radio frequency identification tags (RFIDs) concealed throughout the machine, Datatag micro dots, and a unique DNA coded chemical painted on the machines major components. Plus a registration certificate logged onto the CESAR or DVLA databases, and a change of keeper form.

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Operation

Introduction

T2-006_2

The aim of this part of the manual is to guide the operator step-by-step through the task of learning how to operate the machine efficiently and safely. Read the ***Operation*** section through from beginning to end.

Before you start the machine, you must know how the machine operates. Use your manual to identify each control lever, switch, gauge, button and pedal. Do not guess. If there is anything you do not understand, ask your JCB distributor.

The operator must always be aware of events happening in or around the machine. Safety must always be the most important factor when you operate the machine.

When you understand the operating controls, gauges and switches, practice using them. Drive the machine in an open space, clear of people. Get to know the 'feel' of the machine and its driving controls.

Finally, do not rush the job of learning, make sure you fully understand everything in the ***Operation*** section. Take your time and work efficiently and safely.

Remember

BE CAREFUL
BE ALERT
BE SAFE

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Before Entering the Cab

T2-025_3

The following checks should be made each time you return to the machine after leaving it for any period of time. We advise you also to stop the machine occasionally during long work sessions and do the checks again.

All these checks concern the serviceability of the machine. Some concern your safety. Get your service engineer to check and correct any defects.

⚠ WARNING

Walking or working under raised attachments can be hazardous. You could be crushed by the attachments or get caught in the linkages.

Lower the attachments to the ground before doing these checks. If you are new to this machine, get an experienced operator to lower them for you.

If there is nobody to help you, study this manual until you have learned how to lower the attachments. Also make sure that the park brake is engaged before doing these checks.

2-2-1-1

1 Check for cleanliness.

- **a** Clean the windows, light lenses and rear view mirrors.
- **b** Remove dirt and debris, especially from around the linkages, rams, pivot points and radiator.
- **c** Make sure the cab step and handholds are clean and dry.
- **d** Clean all safety and instructional labels. Replace any that are missing or cannot be read.

2 Check for damage.

- **a** Inspect the machine generally for damaged and missing parts.
- **b** Make sure that the attachment is secure and in good condition.
- **c** Make sure that all pivot pins are secured correctly in place.
- **d** Inspect the windows for cracks and damage. Glass splinters can blind.
- **e** Check for oil, fuel and coolant leakages underneath the machine.

⚠ 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.

2-2-1-2

3 Make sure the tyres are correctly inflated.

Check for cut rubber and penetration by sharp objects. Do not use a machine with damaged tyres.

4 Make sure that all of the filler caps are installed correctly.

5 Make sure that all of the access panels are closed and secure.

Note: *If the filler caps and access panels are fitted with locks, we recommend that you lock them to prevent theft or tampering.*

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Entering and Leaving the Cab

⚠ WARNING

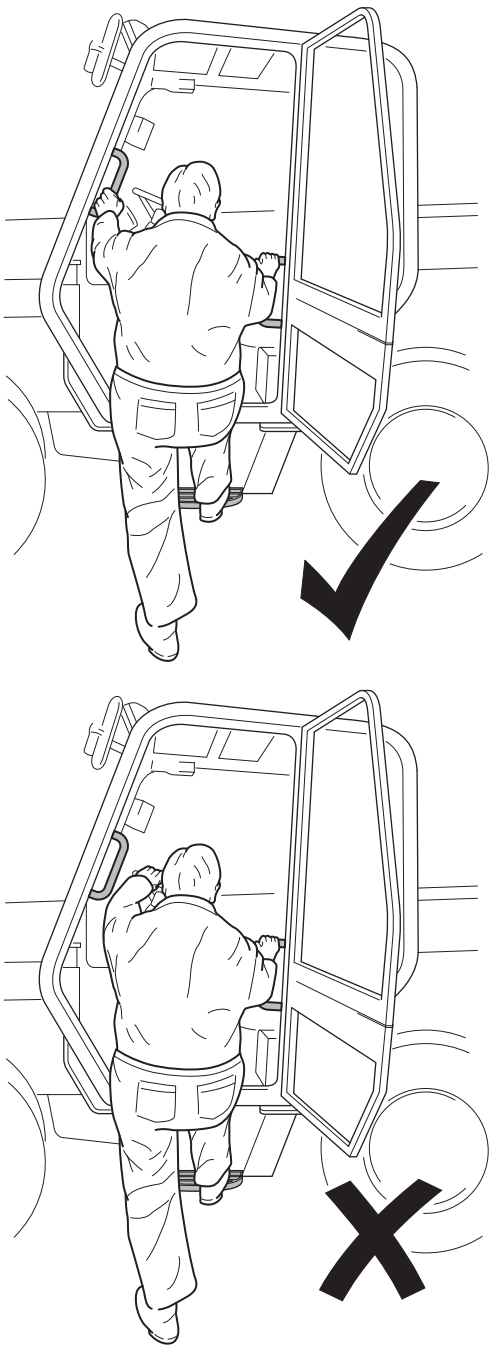
Entering/Leaving

Entering or leaving the cab or canopy must only be made where steps and handrails are provided. Always face the machine when entering and leaving. Make sure the step(s), handrails and your boot soles are clean and dry. Do not jump from the machine. Do not use the machine controls as handholds, use the handrails.

INT-2-1-7_1

Make sure the machine is stopped and correctly parked before entering or leaving the cab. If necessary, refer to ***Stopping and Parking the Machine***.

When you get on and off the machine always maintain a three point contact with the handrails and step. Do not use the machine controls or steering wheel as handholds.



T014350-2

Fig 14.

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Emergency Exit

⚠ WARNING

Do not obstruct the rear cab window, this is an Emergency Exit.

5-2-1-9

The rear window can be quickly opened in the event of an emergency. To fully open the window, do the following:

1 Remove pins **D** and open the window fully.

Note: *Pins **D** should only be removed in the event of an emergency exit. Do not remove it simply to increase the rear window opening.*

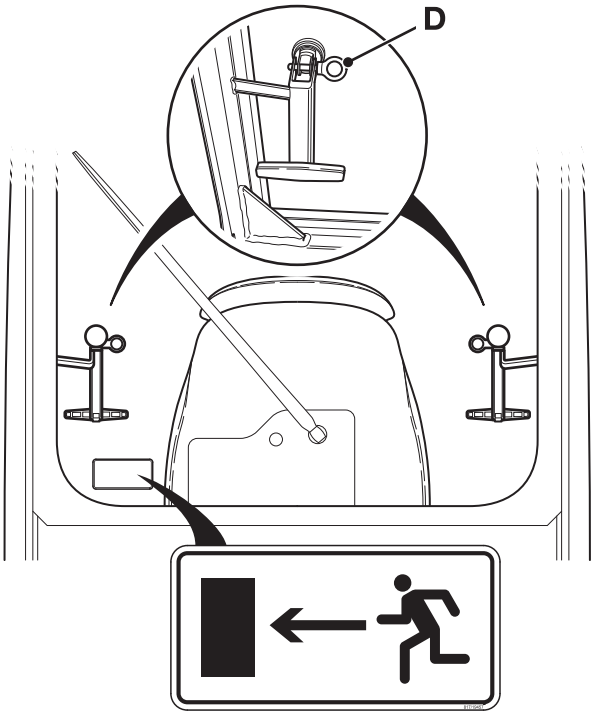
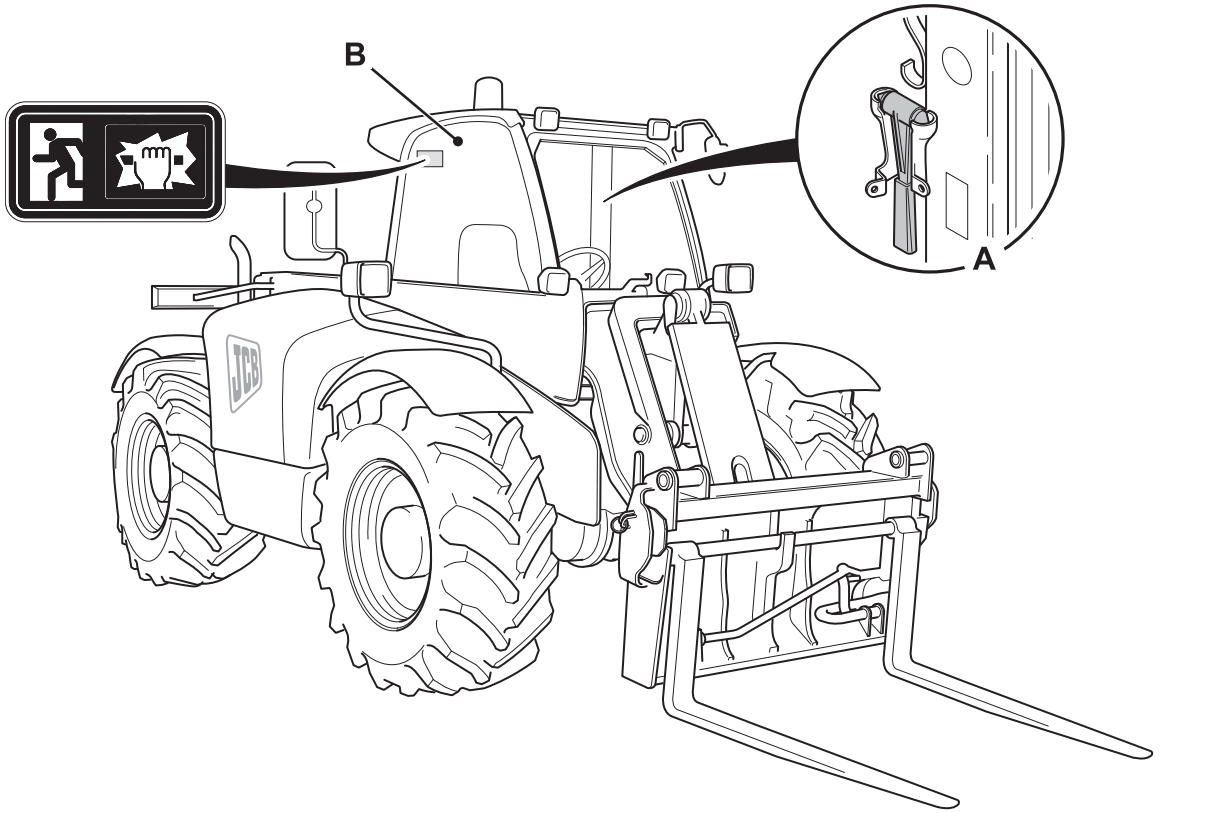


Fig 15.

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Glazing Breaker (if fitted)



810750-2

Fig 16.

If the machine is fitted with a glazing breaker **A**, it is possible to use the side screen **B** as an emergency exit.

In the event of an emergency:

1 Remove the glazing breaker **A** from it's stowage position.

2 Strike the side screen **B** near the corner. This will shatter the screen, which can then be knocked out.

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Doors and Windows

Opening and Closing the Door

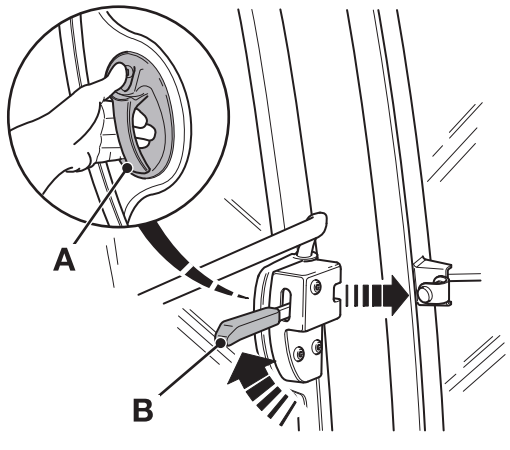
T2-060

To open a door from the outside, unlock it with the key and pull the handle **A**. The door is fitted with an assister which will spring it open and hold it open.

Close the door from the inside by pulling it firmly; it will latch itself.

To open the door from the inside, operate lever **B**.

Note: *Do not drive the machine with the door unlatched.*



770810-3

Fig 17.

Opening and Closing the Upper Door Section

With the door closed, release the upper section by pulling lever **E** to the rear. Swing the door fully open until it latches.

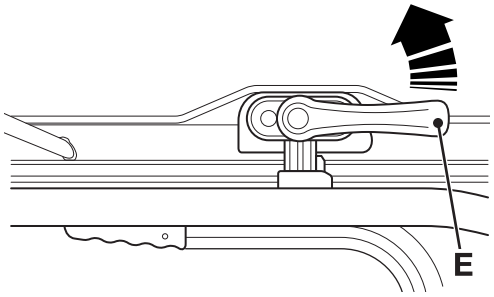
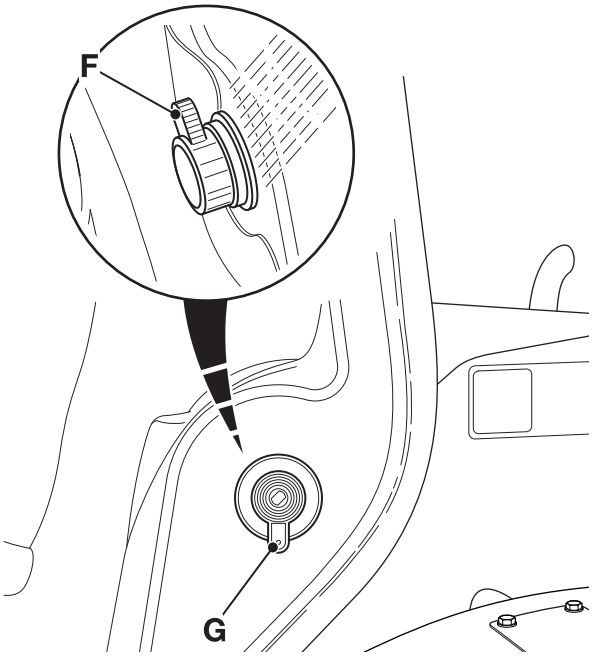


Fig 18.

To close the upper door section, release catch **F** (if inside the cab) or catch **G** (if outside the cab) and swing the door closed. Latch the upper door onto the lower door by pushing lever **E** forward and down.



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Opening and Closing the Rear Window

To open the window, swing catches **A** and **B** in the direction shown, as far as required.

To close the window, swing catches **A** and **B** in the opposite direction until it 'locks' in position.

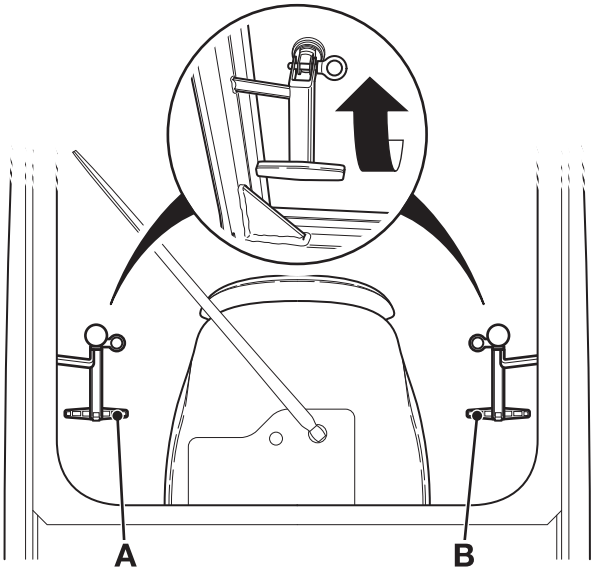


Fig 19.

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Visibility Aids

Mirrors and Adjustment

Introduction

The following information is provided so that the operator can minimise visibility hazards when operating the machine.

This machine meets the visibility requirements specified in Fpr EN 15830:2011. The machine has been subject to a static visibility assessment with a simulated load in two positions: the load on the forks 500 mm +/- 50 mm above the ground, and the load suspended 600 mm beneath the forks while the forks are 2200 mm above the ground. The test simulates operator visibility in establishing lines of sight between the operator's eyes and points on the ground at a 12 metre radius from the machine, and on a boundary line 1.5 metres above the ground and 1 metre away from the smallest rectangle that encompasses a plan view of the machine. Whilst based upon ergonomic data (binocular eye spacing, turning of the head and body torso movement), the standard sometimes purposefully restricts/removes movement which is ergonomically achievable in order to improve/maintain the current state of art. As a consequence, visibility diagrams in accordance with Fpr EN 15830:2011 often report visibility maskings which do not exist in practice.

Visibility diagrams according to Fpr EN 15830:2011 are provided.

When operating the machine the operator must continually survey his/her field of vision. It is important that the mirrors are securely fitted and are adjusted to give the operator the fields of view shown. The machine should be used in accordance with appropriate jobsite organisation and persons should be kept outside of the immediate vicinity of the machine considering the working range of equipment/ attachment and speed of movement of the machine.

When a mirror is provided to supplement the operator's direct field of vision, it must be adjusted to give the field of view shown in order for it to serve as an aid to the operator in seeing people or obstacles around the machine. The mirror provides indirect vision to hidden areas and improves the effectiveness of the machines usage.

The visibility requirements of this machine has also been assessed in a lorry trailer loading condition as specified in Fpr EN 15830:2011. The machine has been subject to a static visibility assessment with the simulated load on the forks 1000 mm +/- 50 mm above the ground.

Use of the machine with non-standard modifications, and/ or in non-standard configurations, and/or with attachments that result in restriction of the machine visibility should be assessed in accordance with Fpr EN 15830:2011 to determine if further devices and/or jobsite controls are required. If a suspended load or the resulting geometry creates a substantial blockage to visibility, the operator should consider alternative means of carrying the load (e.g. palletised load).

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Visibility Diagrams

540-200

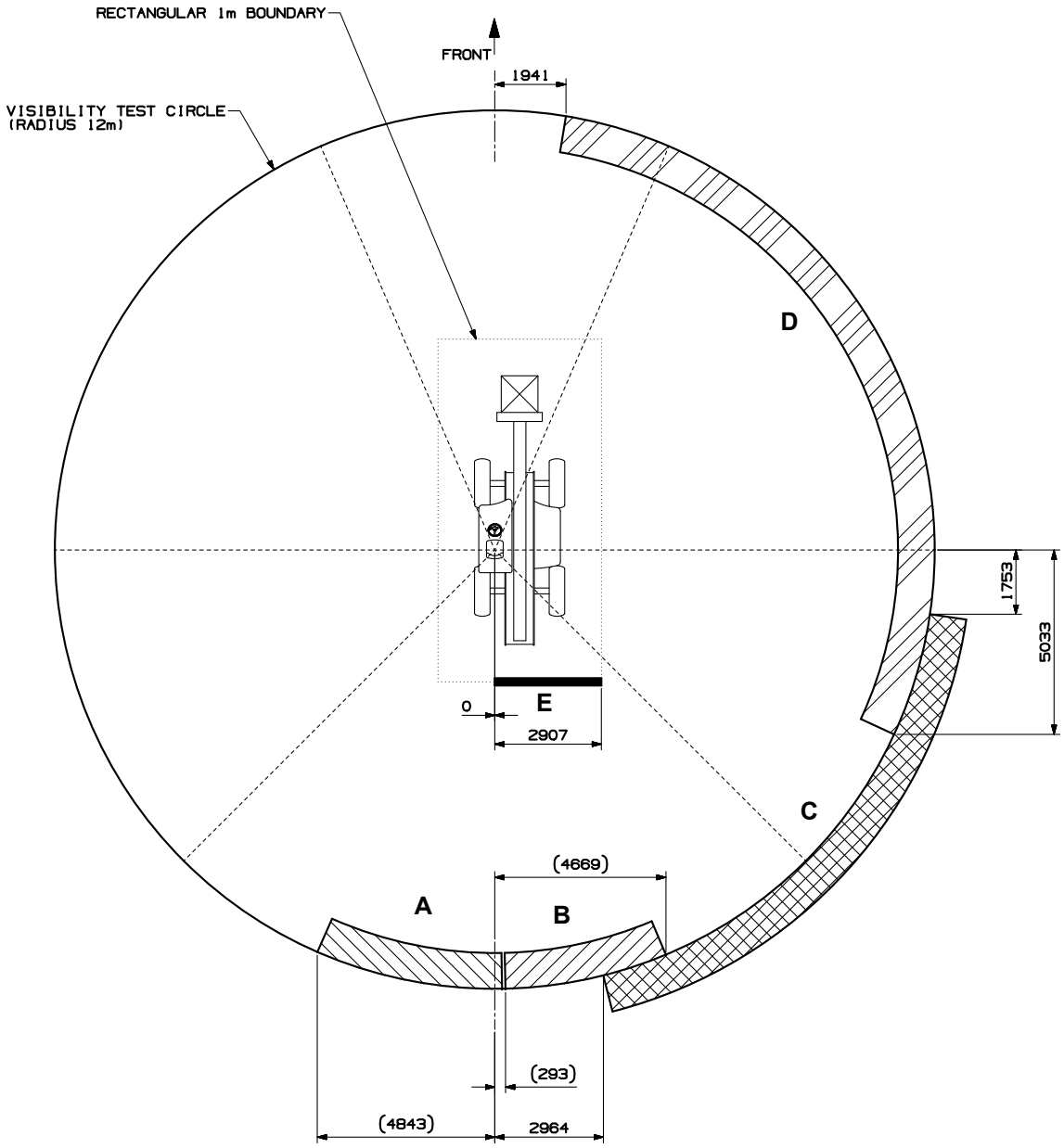


Fig 20. Mirror Setup - 540-200

Table 2. Identification Key

A	Left Hand Mirror
B	Right Hand Mirror
C	Right Hand Wide Angle
D	Left Hand Wide Angle
E	Rear Mounted Wide Angle

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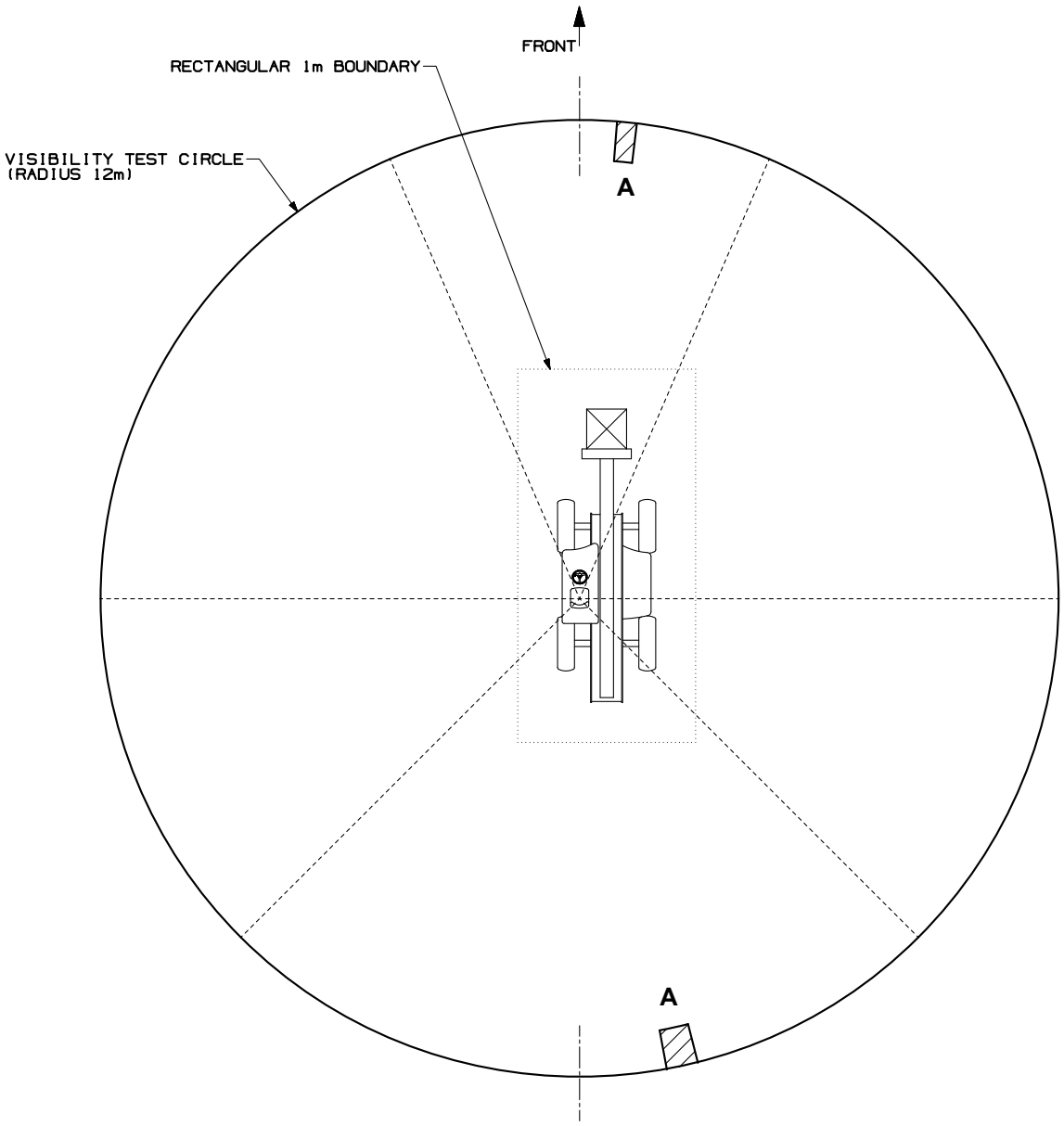


Fig 21. Visibility Masking in Suspended Load Condition - 540-200

Table 3. Identification Key

A	Masking at 12m radius measured at ground level.
B	Masking at 12m radius measured at 0.75m above ground level.
C	Masking at 1m boundary measured between ground level and 1.5m above ground level.

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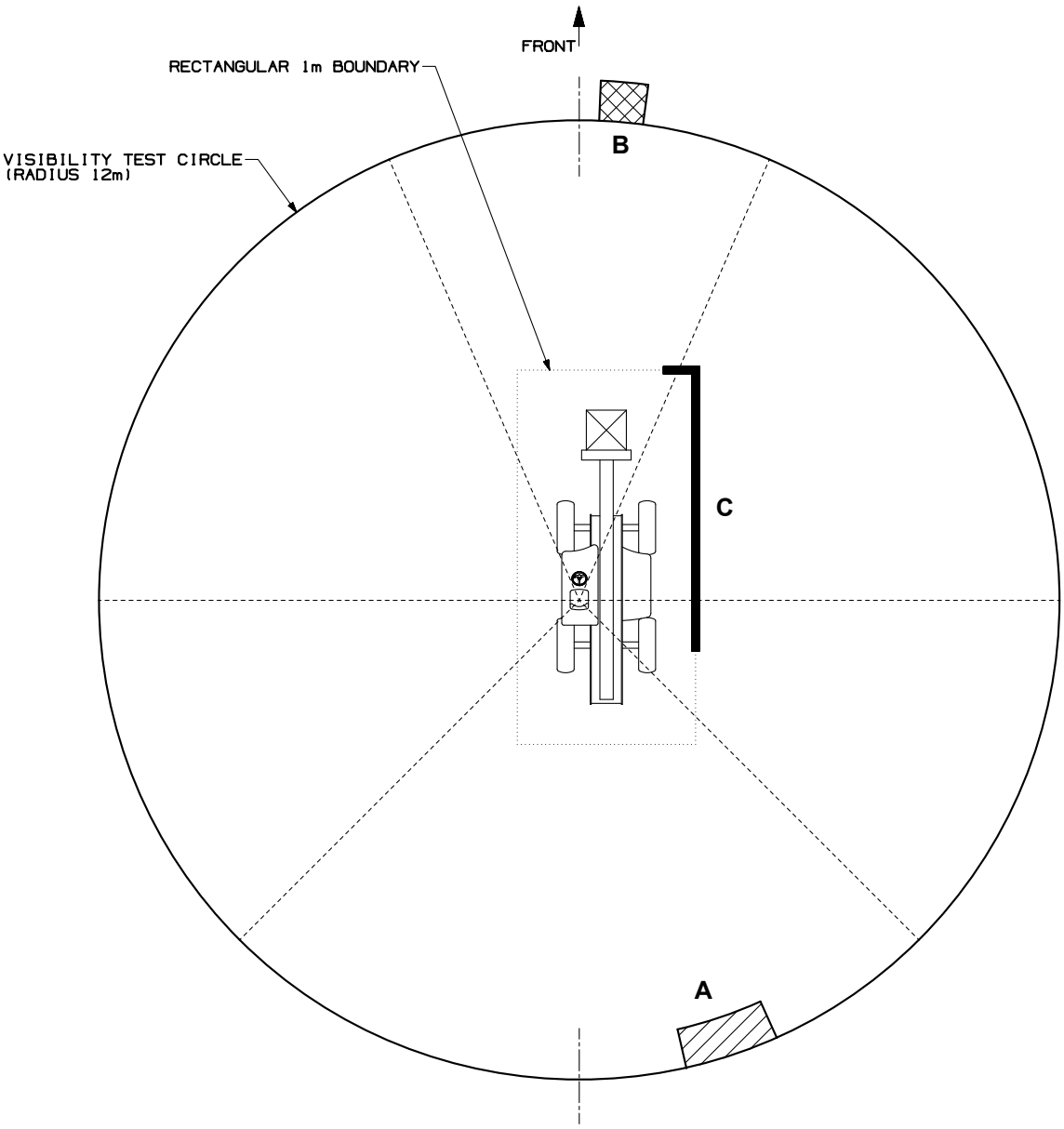


Fig 22. Visibility Masking in Lorry Trailer Loading Condition - 540-200

Table 4. Identification Key

A	Masking at 12m radius measured at ground level.
B	Masking at 12m radius measured at 0.75m above ground level.
C	Masking at 1m boundary measured between ground level and 1.5m above ground level.

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Seat Controls

Introduction

T2-007_3

⚠ WARNING

Seat

Position the seat so that you can comfortably reach the machine controls. Do not adjust the seat while the machine is moving. You could have an accident if you operate the machine with the seat in the wrong position.

13-1-1-9_1

The operator's seat can be adjusted for your comfort. A correctly adjusted seat will reduce operator fatigue. Position the seat so that you can comfortably reach the machine controls. For driving the machine, adjust the seat so that you can depress the pedals fully with your back against the seat back.

Operator Present Switch

All seat options have been fitted with an operator present switch. The switch ensures there is an operator present in the machine, and has the following effects.

1 If there is no operator in the seat it is not possible to engage drive.

2 If the operator leaves the seat, with the transmission engaged and the handbrake disengaged, then the machine will remain in drive but a visual warning will appear on the dashboard. ⇨ *Switches (58)*

Seat Options

Heated Seat

Note: *The heated seat option is only available on the KAB 800 Series and Grammer Air Suspension Seats.*

A manually operated switch is located on the rear of the backrest. Press heater switch to select ON. Functions only with the ignition ON.

The seat heater is thermostatically controlled and operates intermittently to achieve and maintain a predetermined temperature. No manual temperature adjustment is available.

Control Pod Adjustment (if applicable)

To adjust the position of the control pod **A**:

1 Stop and park the machine.

2 Press button **B** to isolate the machine hydraulics. This will to prevent accidental operation of the controls during adjustment.

3 Push lever **C** in the direction shown, to unlock the control pod.

4 Move the control pod forwards or backwards, as required.

Make sure that you can comfortably reach the machine controls when you are sat correctly in the operator seat.

5 Pull lever **C** in the direction shown, to lock the control pod.

6 Release button **B** to enable the machine hydraulics.

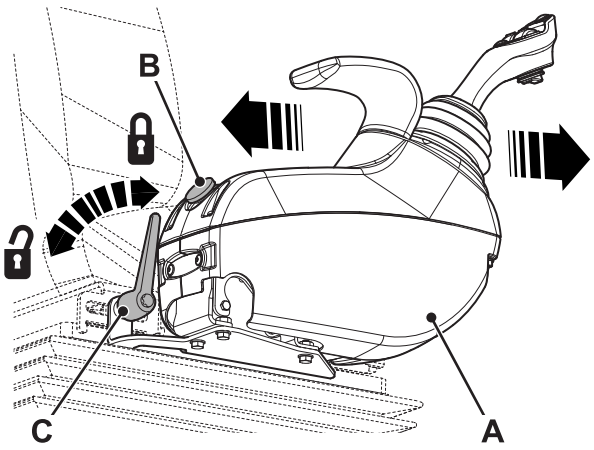
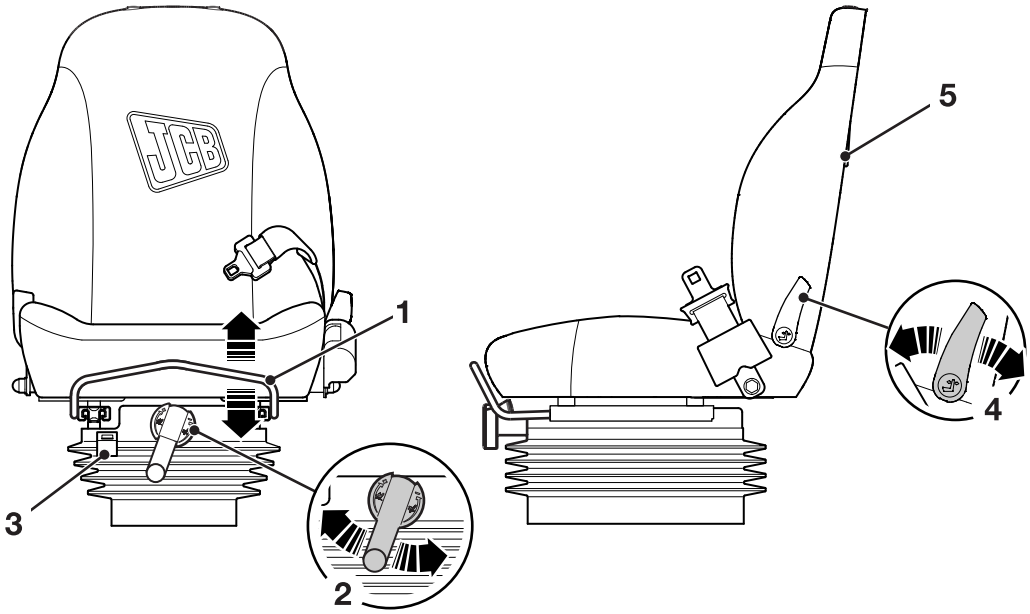


Fig 23.

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Suspension Seat (KAB 100 Series - Mechanical)

P5-2027_3



40-910555-1

Fig 24.

Note: *Adjustments should only be made by the operator when sat on the seat.*

1 Horizontal Adjustment (Slide rails)

2 Height Adjustment

Check that the ride height indicator **3** is in the green 'comfort' zone. Within the green band there is 75mm (3 in.) of height adjustment for any driver.

Note: *The seat is designed so that it is unnecessary to make any adjustment for the driver weight.*

3 Ride Height Indicator. See ***Height Adjustment***.

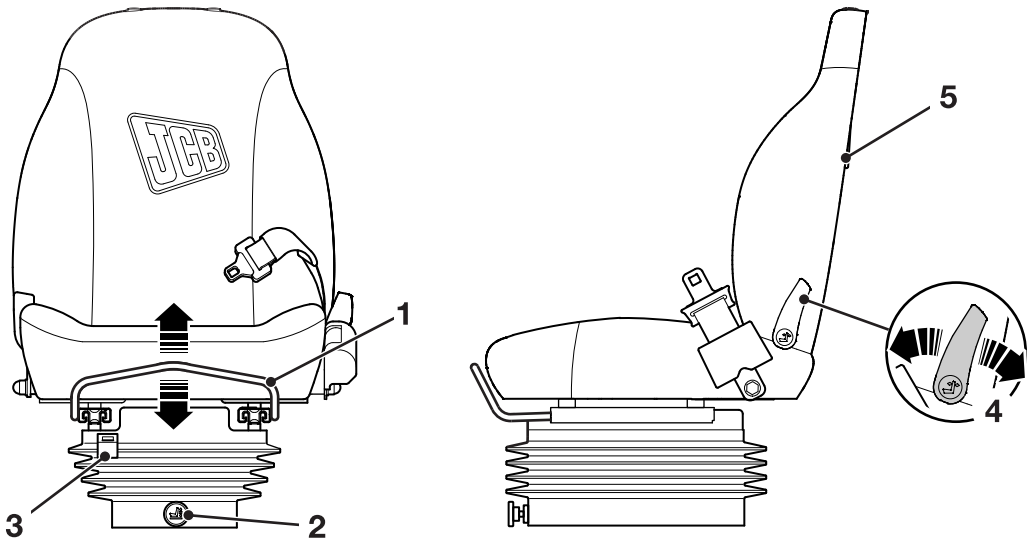
4 Backrest Angle Adjustment (if fitted).

5 Document Pocket

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Suspension Seat (KAB 100 Series - Air)

P5-2028_3



40-910612-1

Fig 25.

Note: *Adjustments should only be made by the operator when sat on the seat.*

1 Horizontal Adjustment (Slide rails)

2 Height Adjustment

Check that the ride height indicator **3** is in the green 'comfort' zone. Within the green band there is 75mm (3 in.) of height adjustment for any driver.

Note: *The seat is designed so that it is unnecessary to make any adjustment for the driver weight.*

3 Ride Height Indicator. See ***Height Adjustment***.

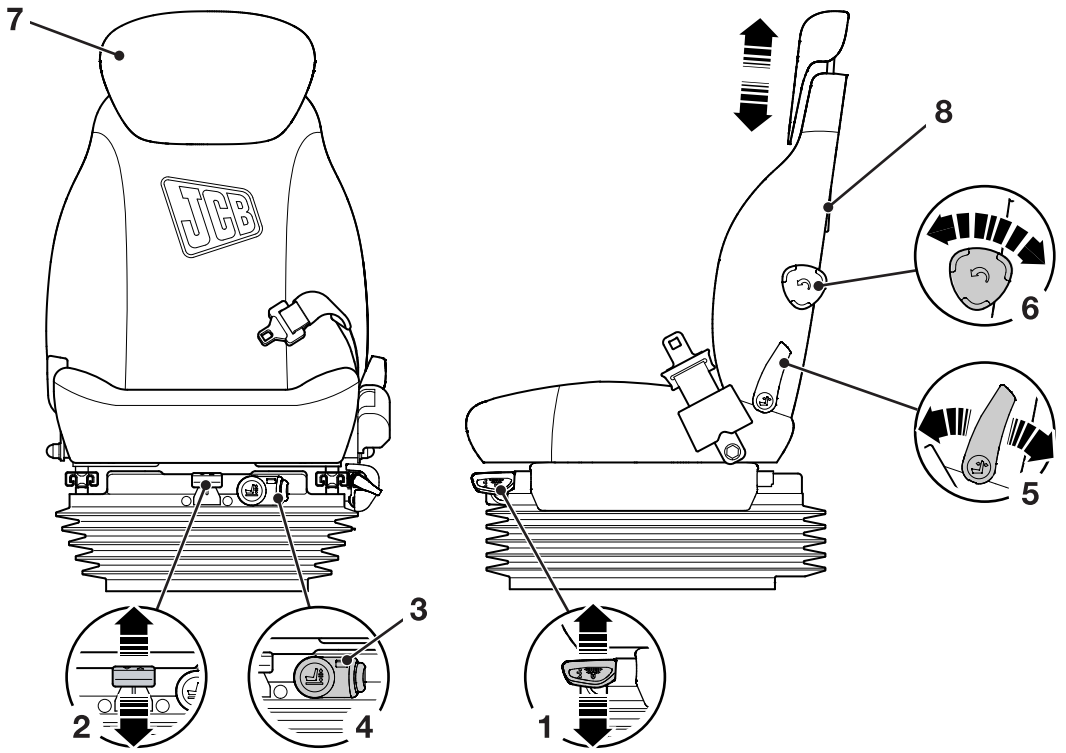
4 Backrest Angle Adjustment

5 Document Pocket

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Suspension Seat (KAB 800 Series - Air)

P5-2029_3



40-910556-1

Fig 26.

Note: *Adjustments should only be made by the operator when sat on the seat.*

1 Up = Horizontal Adjustment.

Middle = Horizontal Suspension.

Down = Locked.

2 Height Adjustment

Check that the ride height indicator **3** is in the green 'comfort' zone. Within the green band there is 75mm (3 in.) of height adjustment for any driver.

Note: *The seat is designed so that it is unnecessary to make any adjustment for the driver weight.*

3 Ride Height Indicator. See ***Height Adjustment***.

4 'One Touch Riser' (OTR) (If fitted)

When the seat is below mid ride position, pressing the OTR button **4** automatically adjusts to the mid ride position (it may take a few seconds to do so). This makes it then easier to find the exact height you need, using lever **2**.

5 Backrest Angle Adjustment

6 Lumbar Support Adjustment

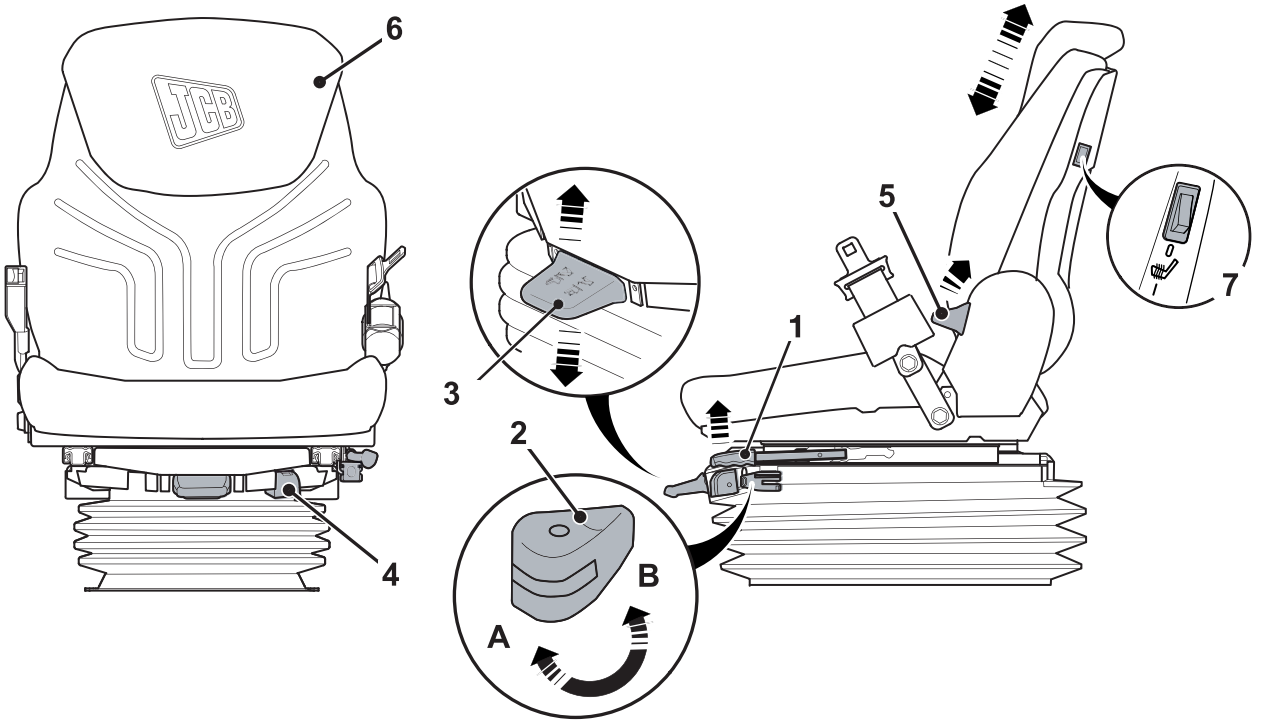
7 Backrest Extension (if fitted)

8 Document Pocket

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Suspension Seat (Grammer - Air)

P5-2077



C094200-1

Fig 27.

Note: *Adjustments should only be made by the operator when sat on the seat.*

1 Horizontal Adjustment (Slide rails)

a Make sure that the horizontal adjustment isolator **2** is in position **A**. Refer to ***Horizontal Adjustment Isolation***.

b Lift the lever **1** then move the seat (forward or backward) to the required position.

c Release the lever **1** and make sure that the seat locks into position.

2 Horizontal Adjustment Isolation.

The horizontal adjustment isolation control provides a shock-absorbing feature which the operator can turn ON and OFF. Turn ON the horizontal adjustment isolation to decrease the shock felt at the operator seat when you move along rough ground or when you tow a trailer.

To turn ON the horizontal adjustment isolation, move the lever **2** to position **B**.

To turn OFF the horizontal adjustment isolation, move the lever **2** to position **A**.

After you make the adjustment, make sure that the locking lever latches into position. Move the seat backwards until it latches with an audible click. It should not be possible to move the isolation control to a different position when it is locked.

3 Weight/Height Adjustment

a Check that the weight/height indicator **4** is in the green 'comfort' zone. Within the green band there is 60 mm (2.3 in.) of weight/height adjustment for any operator.

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b Lift the handle **3** to raise the seat. Release the handle when the green marking is visible in the indicator window.

Push the handle **3** down to lower the seat. Release the handle when the green marking is visible in the indicator window.

4 Weight/Height Indicator. Refer to ***Weight/Height Adjustment***.

5 Backrest Angle Adjustment

a Pull up the locking lever **5** to release the backrest locking mechanism.

b Move the backrest to the desired angle then release the lever **5** to lock the position.

6 Backrest extension height adjustment.

Move the backrest extension **6** (up or down) to the desired position.

7 Seat Heater Switch

To turn ON the heater, move the switch **7** to position **1**.

To turn OFF the heater, move the switch **7** to position **0**.

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Seat Belt

Inertia Reel Seat Belt

T2-001_2

⚠ WARNING

If you do not wear your seat belt you could be thrown about inside the machine, or thrown out of the machine and crushed. You must wear a seat belt when using the machine. Fasten the seat belt before starting the engine.

8-2-9-2_1

⚠ WARNING

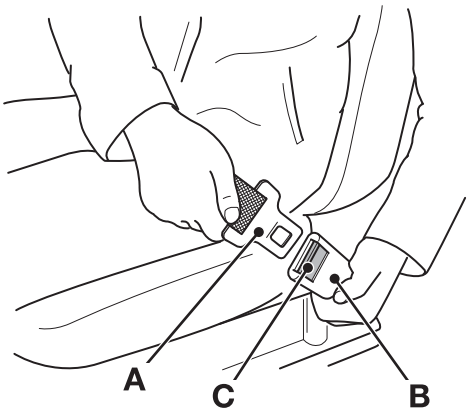
When a seat belt is fitted to your machine replace it with a new one if it is damaged, if the fabric is worn, or if the machine has been in an accident. Fit a new seat belt every three years.

2-3-1-7_1

Fasten the Seat Belt

1 Sit correctly in the seat. Pull the belt from its reel holder in one continuous movement.

2 Push the male fitting **A** into the buckle **B** until it latches into position. Make sure the seat belt is not twisted and that it is over your hips not your stomach.



C006840-1

Fig 28.

Note: *If the belt 'locks' before the male fitting **A** has been engaged, allow the belt to fully retract in its reel holder and then try again. The inertia mechanism may lock if you pull the belt too sharply or if the machine is parked on an incline. In such cases, ease the belt gently from its reel holder.*

Check the Seat Belt is Operating Correctly

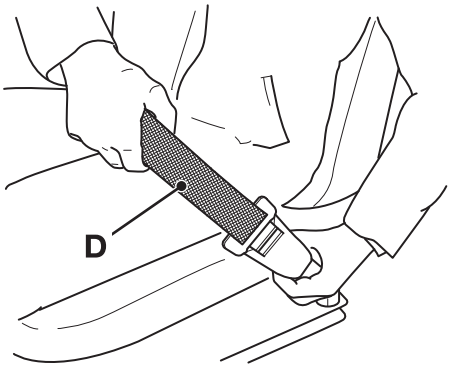
1 Sit correctly in the seat and fasten the seat belt as described.

2 Hold the middle of the seat belt as shown at **D** and tug. The seat belt should 'lock'.

⚠ WARNING

If the seat belt does not 'lock' when you check if the seat belt is operating correctly, do not drive the machine. Get the seat belt repaired or replaced immediately.

2-2-2-1



C006850-1

Fig 29.

Release the Seat Belt

⚠ WARNING

Release the seat belt only after switching off the engine.

2-2-1-10

1 Press button **C** and pull the male fitting **A** from the buckle.

2 Let the seat belt retract into its reel holder.

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Static Seat Belt

T2-002

⚠ WARNING

If you do not wear your seat belt you could be thrown about inside the machine, or thrown out of the machine and crushed. You must wear a seat belt when using the machine. Fasten the seat belt before starting the engine.

8-2-9-2_1

⚠ 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

Fasten the Seat Belt

1 Sit correctly in the seat.

2 Push the male fitting **A** into the buckle **B** until it latches into position. Make sure the seat belt is not twisted and that it is over your hips not your stomach.

⚠ WARNING

If the seat belt does not 'lock' when you check if the seat belt is operating correctly, do not drive the machine. Get the seat belt repaired or replaced immediately.

2-2-2-1

Release the Seat Belt

⚠ WARNING

Release the seat belt only after switching off the engine.

2-2-1-10

Press button **C** and pull the male fitting **A** from the buckle **B**.

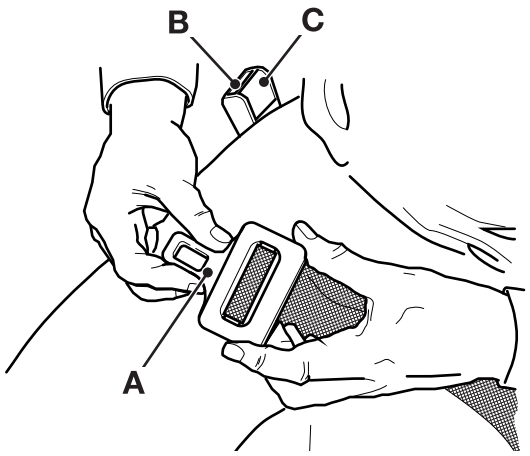


Fig 30.

Adjusting the Seat Belt

Make sure the belt is across your hips and not over your stomach.

To adjust the male fitting **A**:

1 Pull toggle **D** down the strap by the required distance.

a To make the strap longer, pull end **E** as far as it will go.

b To make the strap shorter, pull end **F** as far as it will go.

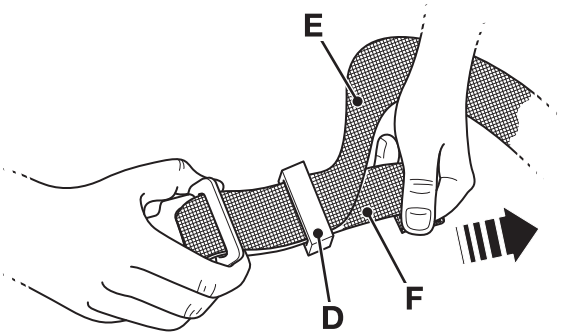


Fig 31.

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Cab Layout

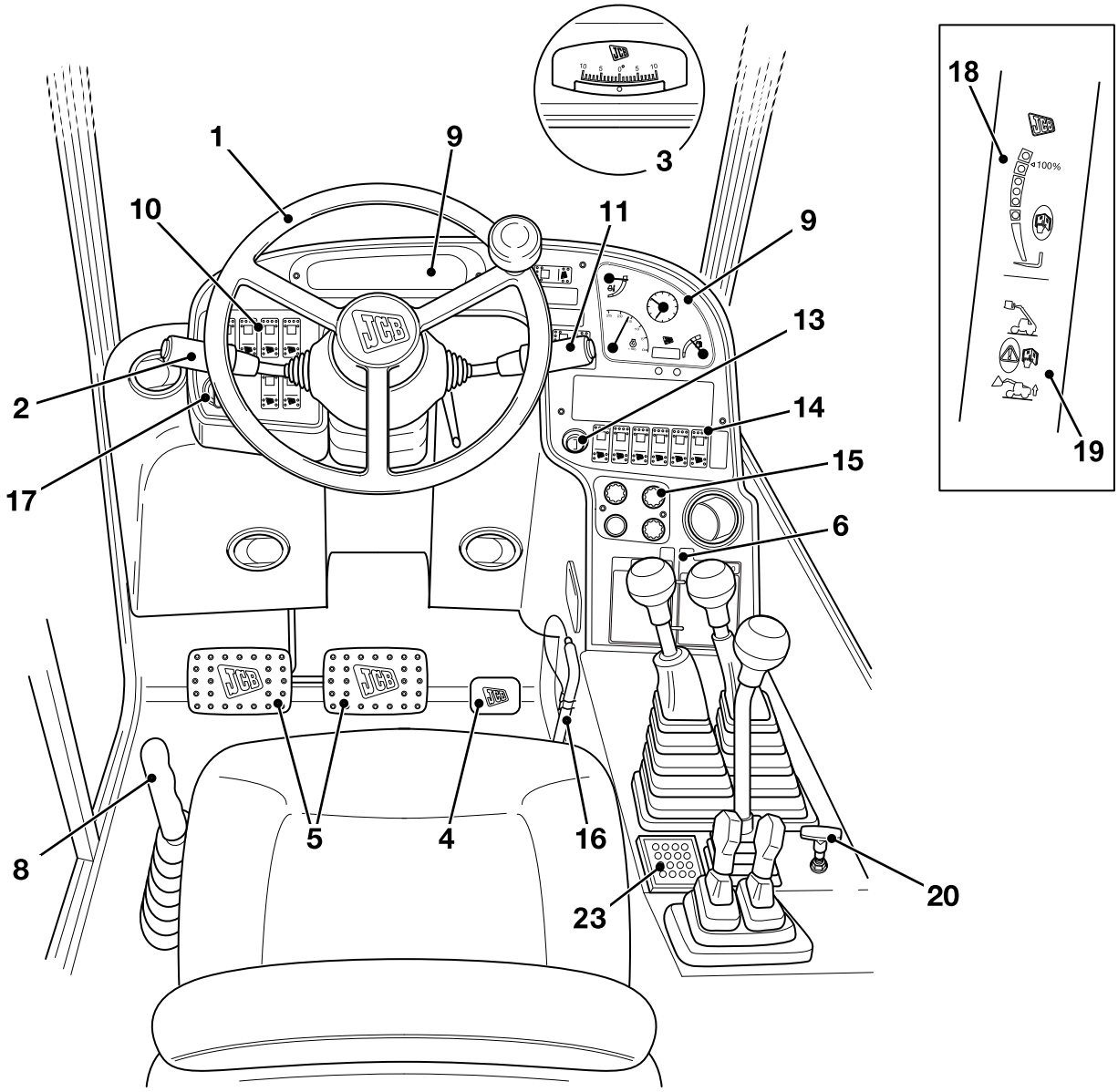


Fig 32.

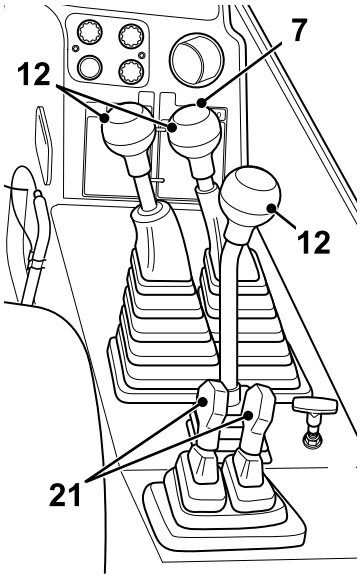
Note: *The cab layout illustration is of a typical machine, for variations see the relevant page in this manual.*

⇒ *Component Key (50)*

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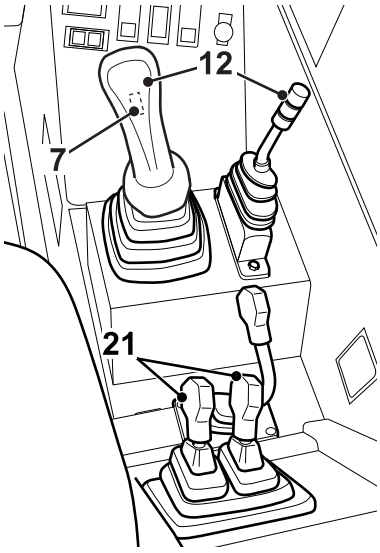
Operating Levers

⇨ *Component Key (🗋 50)*



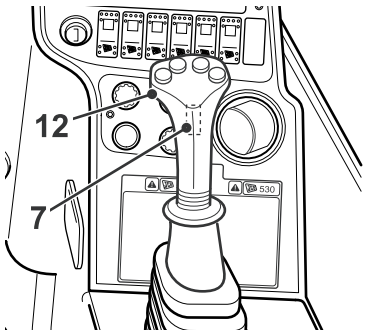
C094350

Fig 33. Dual Lever Control



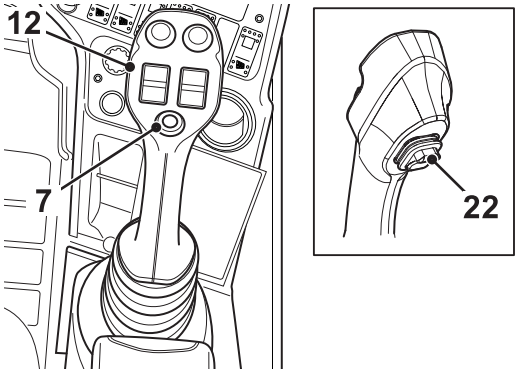
C094380

Fig 34. Servo Control



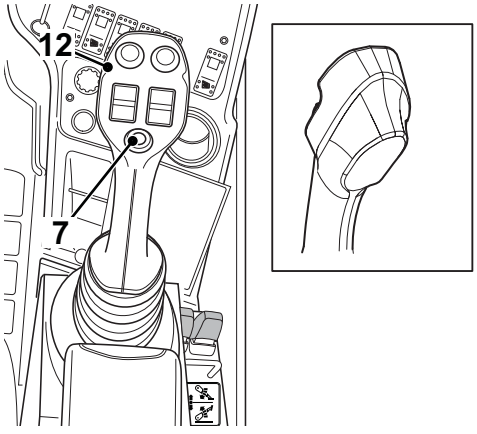
C094360

Fig 35. Single Lever Control (Push Button Type)



C094370

Fig 36. Single Lever Control (Thumb Wheel Type)



C094370-C2

Fig 37. Single Lever Control (Thumb Wheel Type) 540-200 Machines

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Component Key

1 ⇒ *Steering Wheel (51)*
2 A ⇒ *Transmission Lever (4-Speed Powershift Transmission) (52)*
B ⇒ *Transmission Lever (6-Speed Powershift Transmission) (53)*
3 ⇒ *Inclinometer (125)*
4 ⇒ *Accelerator Pedal (51)*
5 ⇒ *Foot Brake Pedal (51)*
6 ⇒ *Load Charts (106)*
7 ⇒ *Transmission Dump Switch (55)*
8 ⇒ *Park Brake Lever (51)*
9 A ⇒ *Instrument Panel (SD and SF Engine) (66)*
B ⇒ *Instrument Panel (SE Engine) (72)*
10 Switches located on the left side of the cab. ⇒ *Console Switches (58)*
11 A ⇒ *Multi-Purpose Steering Column Switch (4-Speed Transmission) (63)*
B ⇒ *Multi-Purpose Steering Column Switch (6-Speed Transmission) (64)*
12 ⇒ *Operating Levers (86)*
13 ⇒ *Starter Switch (65)*
14 Switches located on the right side of the cab. ⇒ *Console Switches (58)*
15 ⇒ *Air Conditioning and Cab Heater Controls (85)*
16 ⇒ *Control Locks (102)*
17 ⇒ *Steer Mode Selector (56)*
18 ⇒ *Longitudinal Load Moment Indicator (LLMI) (109)*
19 A ⇒ *LC4 Load Control System (117)*
B ⇒ *Longitudinal Load Moment Control (LLMC) System (113)*
20 Hydraulic Tow Hitch Release. ⇒ *Hydraulic Tow Hitch Option (162)*
21 ⇒ *Stabiliser Control Option (100)*
22 ⇒ *Drive Selection Switch (if fitted) (55)*
23 ⇒ *Immobiliser (if fitted) (131)*

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Drive Controls, Switches and Instruments

Drive Controls

Steering Wheel

T2-010

Turn the steering wheel in the direction you want to go.

Important: *This machine is a 4-wheel steer machine. Before you drive the machine, understand how the three steer modes change the operation of your machine (for example, the machines turning circle). Refer to* ***Steer Mode Selector****.*

Steering Column Adjustment

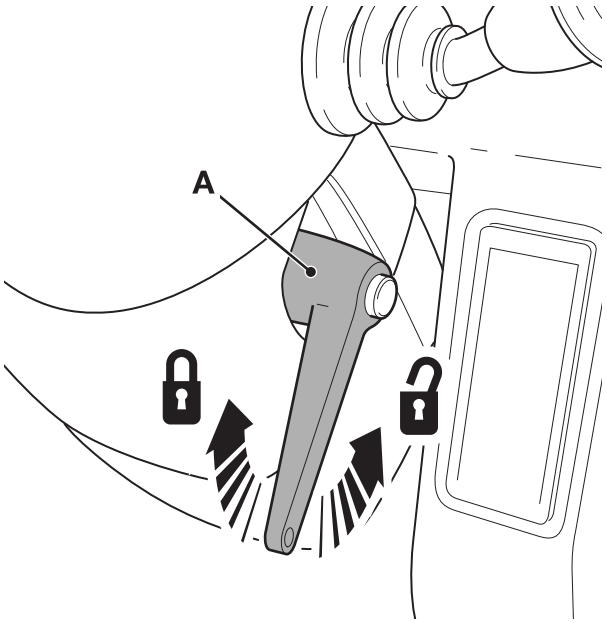
P5-2034_2

⚠ WARNING

Make sure the steering column is locked in position. Do not adjust the steering column while driving.

INT-2-1-16

Use the lever **A** to set the steering column to the correct position for when you sit correctly on the operator seat.



T014600-1

Fig 38.

1 Hold the steering wheel then turn the lever **A** in a counter clockwise direction to unlock the steering column.

2 Lift or lower the steering wheel to the correct position then turn the lever **A** in a clockwise direction to lock the steering column.

Note: *The locked position of lever* ***A*** *can be altered - pull the lever out and move to the required position.*

Accelerator Pedal

T2-011

Push this pedal down to increase engine speed. Let the pedal up to reduce engine speed. With your foot off the pedal the engine will idle.

Foot Brake Pedal

T2-012_2

Push down on the brake pedals to slow or stop the machine. Use the brakes to prevent overspeeding down a slope.

The brake pedal is in two parts so that you can use either foot to operate the brakes. Note that the two parts are linked together, depressing either side applies all brakes and they do not operate independently.

The stop lights should come on when the brakes are applied. Do not drive the machine unless both stop lights work correctly.

Park Brake Lever

T2-013

Use this lever to engage the park brake before leaving the machine.

Note: *The transmission drive is automatically disconnected when the park brake is engaged.*

To engage the park brake, pull the lever up (vertical).

Note: *If the park brake is engaged when forward/reverse is selected, the Park Brake Engaged Indicator will come on.*

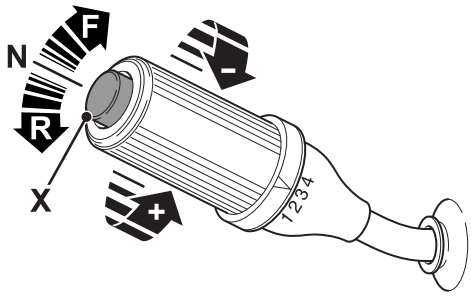
To release the park brake, squeeze the release lever and lower the lever as far as it will go (horizontal).

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Transmission Lever (4-Speed Powershift Transmission)

T2-015_2

Functions



S240120-7

Fig 39.

+/- ⇒ *Gear Selection (🗋 52)*

F/N/R ⇒ *Drive Selection (🗋 52)*

X ⇒ *Horn (🗋 52)*

Gear Selection

When the machine is stationary, make sure that forward/reverse lever is in neutral position (**N**) and the engine at idle, before selecting a gear.

To change gear when the machine is moving rotate the barrel (**+/-**) so that the arrow marked on the barrel aligns with the required gear, you do not need to depress the dump switch.

The machine can be moved off in any gear, depending on ground conditions.

Drive Selection

⚠ WARNING

You and others can be killed or injured if you operate the forward/reverse lever while you travel. The machine will immediately reverse direction without warning to others. Follow the recommended procedure for proper use of this selector.

2-2-2-4_2

Stop the machine before moving the lever. To select forward (**F**), reverse (**R**) or neutral (**N**), 'lift' and move the lever to the required position. All four gears are available in forward and reverse. When reverse is selected an alarm will sound. The engine will only start if the lever is at neutral.

The lever has 'detent' positions in forward, reverse and neutral. To move the lever from the detent position pull the lever towards you.

Procedure for reversing direction:

1 Stop the machine: keep the foot brakes applied.

2 Let the engine speed drop to idle.

3 Select the new direction.

4 Release the foot brakes and accelerate away.

***Note:** If the park brake is engaged when forward/reverse is selected, the Park Brake Engaged Indicator will come on.*

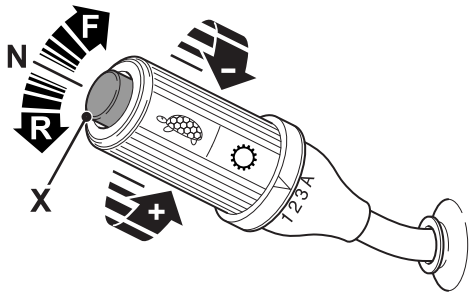
Horn

The horn button **X** is at the end of the forward/reverse lever. Push the button to operate the horn. It functions only with the starter switch set to on.

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Transmission Lever (6-Speed Powershift Transmission)

Functions



S240121-5

Fig 40.

+/- ⇒ *Gear Selection (53)*
⇒ *Downshift Protection (53)*

F/N/R ⇒ *Drive Selection (54)*
⇒ *6-Speed Transmission Modes (54)*

X ⇒ *Kickdown Switch (53)*

Note: *On 6-Speed machines, the horn is located on the Multi-Purpose Steering Column Switch.*

Gear Selection

The 6-speed transmission (when fitted) is controlled by an electronic control unit (ECU). To ensure selection of the most applicable gear ratio and shift points for a given machine application, the operator can select one of three transmission modes. ⇒ *6-Speed Transmission Modes (54)*.

The gear ratio allocated to each of the positions on the column switch depends upon the transmission mode selected, for example position **1** will select gear ratio F1 (Road Mode) or F3 (Field Mode).

When the machine is moving, the operator can manually select gear ratios **1**, **2** and **3** by rotating the column switch (**+/-**) to the required position.

Note: *When the machine is stationary, make sure that forward/reverse lever is in neutral position (**N**) and the engine at idle, before selecting a gear.*

When the column switch is rotated to position '**A**', the machine will gear change automatically according to road speed and the transmission mode selected.

⚠ CAUTION

Gear or direction changes on this machine will only occur at a predetermined speed, this may result in gear/direction change delays. To prevent unexpected gear changes only select gears or direction as they are required.

2-1-1-14

To enable a higher gear, the accelerator pedal must be pressed. Release the accelerator pedal fully when coasting down hill, this prevents up shifts occurring, thus ensuring maximum machine control.

Maximum road speed in 6th gear is increased to 40 km/hr (25 mph) where legislation allows.

Downshift Protection

The ECU will protect the transmission when changing down. If the speed is too high, two audible bleeps will sound, when a lower gear is selected. The transmission will remain in the currently selected gear until the speed has reduced sufficiently for the downshift to occur.

This feature must not be used to pre-select a lower gear.

If the transmission electronic protection system fails contact your nearest JCB Distributor to get the fault rectified as soon as possible.

Kickdown Switch

Press switch **X** to operate transmission kickdown.

When the kickdown switch is pressed, the next lowest gear is selected. Pressing the kickdown switch again will select the previous higher gear. The previous higher gear will also be selected if the forward/reverse lever is moved through neutral position.

The machine will remain in the kickdown gear, even if the speed increases, until either the kickdown is pressed or next higher gear is selected.

A warning buzzer (double-bleep) will sound once if a selection is made which is not allowed by the electronic control unit (E.C.U.). For example, travel speed may be too fast. In this instance, reduce speed and select kickdown again.

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6-Speed Transmission Modes

To ensure selection of the most applicable gear ratio and shift points for a given machine application, the operator can select one of the following three transmission modes. These modes can be selected by means of a cab mounted switch. ⇒ *Fig 41. (54)*. Use the selector switch to select the transmission mode which is most suitable for the terrain and work you are doing.

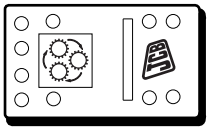


Fig 41.

Note: *The current transmission mode is displayed on the Vehicle Status screen.* ⇒ *Transmission Screen (Excluding 550/560-80 Machines) (74)*.

1 **ECO Road Mode** - When the column switch is rotated to position '**A**' the transmission shifts gears 4-6 automatically to accelerate quickly; increasing efficiency and reducing fuel consumption. This mode is best suited to high-speed, unladen roading.

Table 5. ECO Road Mode Gear Ratios

Column Switch Position	Gear Ratio	
	Forward	Reverse
1	F1	R1
2	F2	R2
3	F3	R2
A	F4 - F6	R3 - R4

2 **Power Road Mode** - In this mode gear shifts are prevented until the engine has reached maximum power. This mode is best suited to applications such as trailer towing or operations requiring high tractive effort.

Table 6. Power Road Mode Gear Ratios

Column Switch Position	Gear Ratio	
	Forward	Reverse
1	F1	R1
2	F2	R2
3	F3	R2
A	F3 - F6	R3 - R4

3 **Field Mode** - This mode allows the operator to manually select up to gear 5 (this is normally a automatic shift). Field mode is suitable for applications such as straw collection or operations where a single gear needs to be maintained.

Table 7. Field Mode Gear Ratios

Column Switch Position	Gear Ratio	
	Forward	Reverse
1	F3	R2
2	F4	R3
3	F5	R4
A	F4 - F5	R3 - R4

Drive Selection

⚠ WARNING

You and others can be killed or injured if you operate the forward/reverse lever while you travel. The machine will immediately reverse direction without warning to others. Follow the recommended procedure for proper use of this selector.

2-2-2-4_2

Stop the machine before moving the lever. To select forward (**F**), reverse (**R**) or neutral (**N**), 'lift' and move the lever to the required position. All four gears are available in forward and reverse. When reverse is selected an alarm will sound. The engine will only start if the lever is at neutral.

The lever has 'detent' positions in forward, reverse and neutral. To move the lever from the detent position pull the lever towards you.

Procedure for reversing direction:

1 Stop the machine: keep the foot brakes applied.

2 Let the engine speed drop to idle.

3 Select the new direction.

4 Release the foot brakes and accelerate away.

If the park brake is engaged when forward/reverse lever is selected, the Park Brake Engaged Indicator will come on and an audible alarm will sound.

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Drive Selection Switch (if fitted)

⚠ WARNING

You or others can be killed or injured if you operate the forward/reverse switch when travelling. The machine will immediately reverse direction without warning to others. Follow the recommended procedure for proper use of this switch.

0114

Your machine may be fitted with a Drive Selection switch **A**. Use the switch to change/select the direction of travel during loading and unloading operations.

Important: *The Drive Selection switch **A** is disabled if the Transmission Lever **B** is moved from the Neutral (**N**) position. Before you operate the switch, read and understand the principle of operation of the Transmission lever.*

To select/change the direction of travel:

1 Stop the machine, keep the foot brakes applied.

2 Set the transmission to the Neutral position.

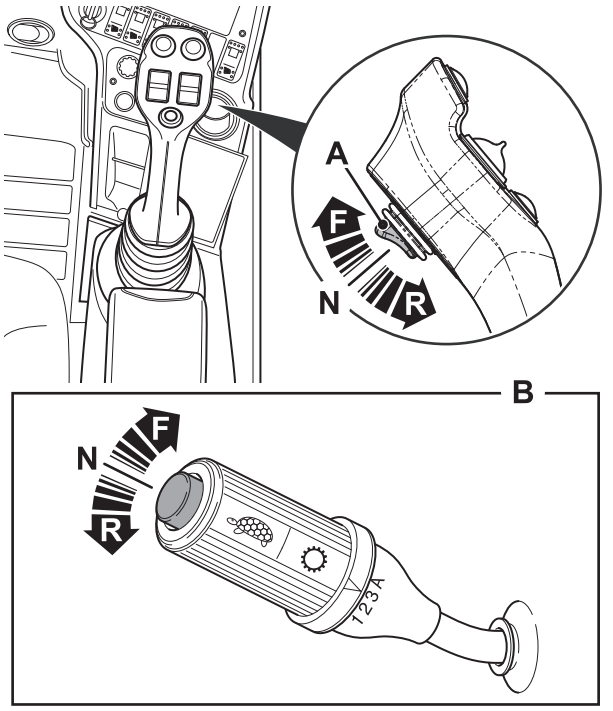
- **a** Make sure that the Transmission Lever **B** is set to the Neutral (**N**) position. The Drive Selection switch **A** is disabled, when the Transmission Lever **B** is set to the Forward (**F**) or Reverse (**R**) position.
- **b** Make sure that the Drive Selection switch **A** is set to the Neutral (**N**) position. The machine will not recognise a change in direction unless the switch has first been set to neutral.

3 To select Forward (**F**) or Reverse (**R**), move the switch **A** to the required position.

The Vehicle Status screen updates to show that the Drive Selection switch is active. ⇨ *Transmission Screen (Excluding 550/560-80 Machines) (74)*.

Note: *If the park brake is engaged when forward/reverse is selected, the Park Brake Engaged Indicator will come on and an audible alarm will sound.*

4 Release the foot brakes and accelerate away.



T006800-5

Fig 42.

A Drive Selection switch

B ⇨ *Transmission Lever (4-Speed Powershift Transmission) (52)*

⇨ *Transmission Lever (6-Speed Powershift Transmission) (53)*

Transmission Dump Switch

T2-014

You do not need to depress the switch when changing gear. The dump switch can be used to momentarily dump the transmission pressure to improve the hydraulic performance and reduce engine load.

Transmission Disconnect Switch

Transmission Disconnect mode - On

When the brake pedal is applied the transmission is disconnected from the axles to prevent the machine driving against the pressure of the brakes. This operates automatically when the mode is set to 'On'.

Transmission Disconnect mode - Off

The transmission is not disconnected when the brake pedal is applied.

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Steer Mode Selector

Introduction

T2-016

⚠ WARNING

In 4-wheel steer, the back end of the machine will swing out when you make a turn. Check for clearance before making a turn.

5-2-3-3

This machine is a 4-wheel steer machine. Before you drive the machine, understand how the three steer modes change the operation of your machine (for example, the machines turning circle). Select the steer mode which is most suitable for the terrain and type of work you are doing.

⚠ 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).

For further information, refer to ***Wheel Alignment***.

Manual Steer Mode Selector

To change the steer mode:

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

2 Turn the steering wheel until all the wheels are pointing in the straight ahead position.

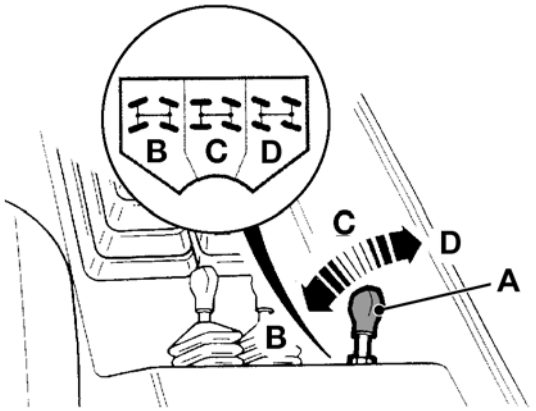
3 Use the lever **A** to select the steer mode required.

B 4-Wheel Steer

C 2-Wheel Steer

D Crab Steer

Note: *Machines with the manual steer mode selector do not have the steer mode indicator lights. Use the decal to identify the current steer mode.*



420680-2

Fig 43.

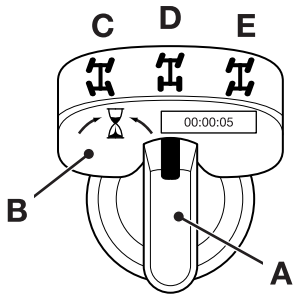
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Electronic Steer Mode Selector

P5-2035

The selector is a three-position rotary switch **A**, which is equipped with a spring-loaded lockplate **B**. ⇒ *Fig 44. (57)*. This enables the selector switch to be locked into the 2-wheel steer mode when the machine is driven on public highways.



432710c-1

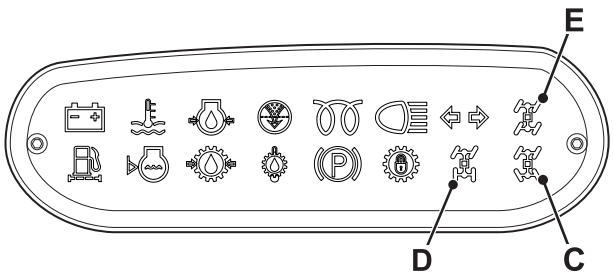
Fig 44.

C 4-Wheel Steer

D 2-Wheel Steer

E Crab Steer

Indicator lights on the instrument panel tell you what steer mode the machine is in. ⇒ *Fig 45. (57)*. An illuminated light indicates that this is the steer mode currently in operation.



795634-2

Fig 45.

When a change of steer mode is requested:

– The indicator light for the current steer mode will remain illuminated until the change is complete; the light will then extinguish.

– The indicator light **D** for the 2-wheel steer mode will flash (two flashes per second) until the change is complete. The indicator light for the new steer mode will then illuminate.

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

If you have any doubt about what steer mode the machine is in, always remember that it is the indicator light which is correct.

The steer mode system is controlled by an electronic control unit (ECU). The steer mode selector lights are used to indicate faults within the system:

– As a bulb and system check, each of the indicators lights illuminate briefly when the starter switch is set to position **I**.

– If the 2-Wheel Steer Engage indicator light **D** repeatedly flashes (four flashes per second) when the machine is operating in any of the three steer modes, the steering requires aligning. Refer to ***Wheel Alignment***.

– If the 2-Wheel Steer Engage indicator light **D** repeatedly flashes (irregular flash pattern) when the machine is operating in any of the three steer modes, contact your JCB dealer.

Note: *Until the fault has been rectified, the machine is restricted to the 2-wheel steer mode.*

Switches

Console Switches

Introduction

SW-001_2

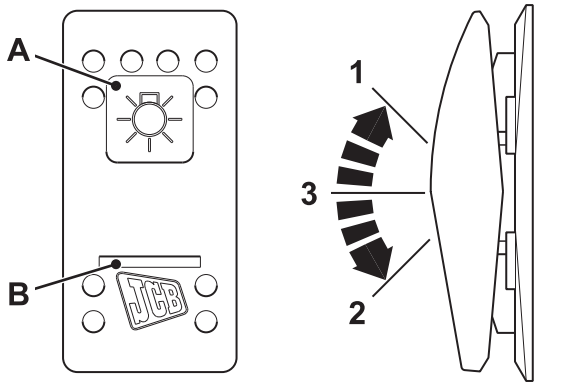
The installed switches and their positions can change according to the specification of the machine.

Each switch has a graphic symbol **A** to show the function of the switch. Before you operate a switch, make sure that you understand its function.

The rocker switches have two or three positions (as shown).

If the switch has a backlight, then the graphic symbol **A** comes on when the ignition switch or side lights are in the ON position.

The light bar **B** comes on to show that the switch function is active.

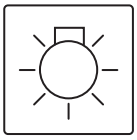


T042100-1

Fig 46.

Left Side

Side Lights and Headlights



340151-1

Three position rocker switch with backlight. The switch functions operate when the starter switch is in the ON and OFF positions.

Position **1**: OFF (Backlight OFF)

Position **3**: Side Lights ON (Backlight ON)

Position **2** (starter switch in the ON position): Headlights ON (Backlight ON)

Position **2** (starter switch in the OFF position): Side Lights ON (Backlight ON)

Machines without headlights or side lights are designed for site use. You may be breaking local laws if you travel on the road without headlights or side lights.

⚠ WARNING

Do not drive on the road with the work lights switched on. You can interfere with other drivers visibility and cause an accident.

2-2-2-5_1

Work Lights (if fitted)



339831-2

Three position rocker switch. The switch functions operate when the starter switch is in the ON position.

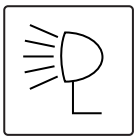
Position **1**: OFF

Position **3**: Front Work Lights ON

Position **2**: Front and Rear Work Lights ON

Note: *The work lights work independently of the main lights circuit.*

Boom Working Light (if fitted)



A710900-1

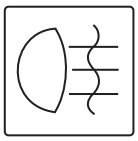
Two position rocker switch. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF

Position **2**: ON

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Rear Fog Light (if fitted)



340051-1

Two position rocker switch. The switch functions operate when the starter switch is in the ON position and the headlights are ON.

Position **1**: OFF

Position **2**: ON

Beacon



339711-1

Two position rocker switch. The switch functions operate when the starter switch is in the ON and OFF positions.

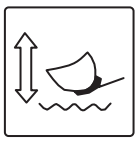
Position **1**: OFF

Position **2**: ON

Before you operate the switch, refer to ***Beacon***.

Right Side

Smooth Ride System (if fitted)



340161-1

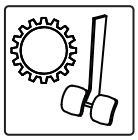
Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Preparing the Machine for Travel***.

Transmission Disconnect



C107440

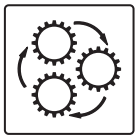
Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF) - Transmission Disconnect not active

Position **2**: ON (Backlight ON) - Transmission Disconnect active

Before you operate the switch, refer to ***Getting the Machine Moving***.

6-Speed Transmission Mode Selector (if fitted)



T007210-3

Two position rocker switch (spring-loaded). The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF

Position **2**: ON (Push then release to move to the next transmission mode.

Before you operate this switch, refer to ***6-Speed Transmission Modes***.

Information



T007200-2

Two position rocker switch (spring-loaded). The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF

Position **2**: ON (Push then release to move to next screen)

Before you operate the switch, refer to ***Digital Display***.

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Hazard Warning Lights



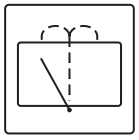
339861-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON and OFF positions.

Position **1**: OFF (Backlight OFF).

Position **2**: ON (Backlight ON). A light on the instrument panel flashes with the outside lights.

Rear Window Wiper (if fitted)



340070-1

Three position rocker switch (spring-loaded). The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF

Position **3**: Wiper ON

Position **2**: Washer ON (Push and hold)

Note: *The wiper will self-park when switched off.*

Roof Wiper



A339811-1

Three position rocker switch (spring-loaded). The switch functions operate when the starter switch is in the ON position.

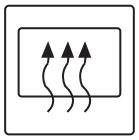
Position **1**: OFF

Position **3**: Wiper ON

Position **2**: Washer ON (Push and hold)

Note: *The wiper will self-park when switched off.*

Heated Rear and Side Windows



A347050-1

Two position rocker switch. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF

Position **2**: ON

Joystick Isolation (if fitted)



A340000-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation does not apply to Agri Xtra models.*

Joystick Isolation



A340000-1

Three position rocker switch (spring-loaded) with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: Disable joystick functions (Backlight OFF)

Position **3**: Joystick functions ON (Backlight ON)

Position **2**: Enable joystick functions (Press then release)

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation applies to Agri Xtra models only.*

Tilt Lock (if fitted)



T007370-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation applies to Agri, Agri Plus, Agri Super, Agri Xtra models only.*

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Stabiliser Isolation



T007370-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation applies to Machines with stabilisers only.*

Boom Extend/Boom Retract Isolation



T007370-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

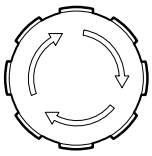
Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation does not apply to Agri, Agri Plus, Agri Super, Agri Xtra models or machines with stabilisers.*

Hydraulic Function Isolation



281701A-1

Two position push switch. The switch functions operate when the engine is running.

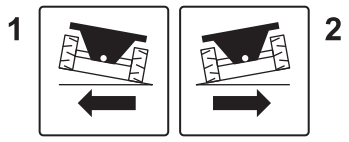
Position **1**: Enable the hydraulic functions (turn the knob to the right then release).

Position **2**: Disable the hydraulic functions (push the knob).

Before you operate the switch, refer to ***Control Lever Locks (if fitted)***.

Important: *The above switch operation applies to Agri Xtra models only.*

Chassis Levelling (Sway) (if fitted)



420790-2

Three position rocker switch (spring-loaded). The switch functions operate when the engine is running.

Position **1**: Sway LEFT (Push and hold)

Position **3**: OFF

Position **2**: Sway RIGHT (Push and hold)

Before you operate the switch, refer to ***Chassis Levelling (Sway) Option***.

Inner Boom Extend and Retract (if fitted)



A361250-2

Two position rocker switch. The switch functions operate when the starter switch is in the ON position.

Position **1**: Disable

Position **2**: Enable

Before you operate the switch, refer to ***Operating Levers, Servo Control***.

Auxiliary Circuit Selector



A339941-1

Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

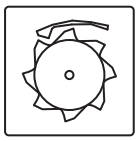
Position **1**: Rear Auxiliary Cicuit (Backlight OFF)

Position **2**: Front Auxiliary Cicuit (Backlight ON)

Before you operate the switch, refer to ***Tow Hitch Options*** and ***Auxiliary Controls***.

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Constant Flow Selector (if fitted)



807350-1

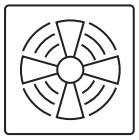
Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: OFF (Backlight OFF)

Position **2**: ON (Backlight ON)

Before you operate the switch, refer to ***Single Lever Control (if fitted)***.

Fan Reverse (if fitted)



T032730-8

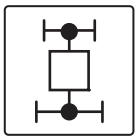
Two position rocker switch. The switch functions operate when the engine is running.

Position **1**: OFF

Position **2**: ON

Before you operate the switch, refer to ***Fan Reverse (if fitted)***.

2/4 Wheel Drive Selector



339650-1

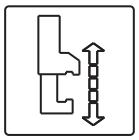
Two position rocker switch with backlight. The switch functions operate when the starter switch is in the ON position.

Position **1**: 4-Wheel drive engaged (Backlight OFF).

Position **2**: 2-Wheel drive engaged (Backlight ON).

Before you operate the switch, refer to ***Getting the Machine Moving***.

Hydraulic Tow Hitch



763140-2

Three position rocker switch (spring-loaded). The switch functions operate when the engine is running.

Position **1**: Raise tow hitch (Push and hold)

Position **3**: Neutral

Position **2**: Lower tow hitch (Push and hold)

Before you operate the switch, refer to ***Tow Hitch Options***.

Important: *The above switch operation applies to Agri Xtra models only.*

Operator Present Switch



T068110

If there is no operator in the seat it is not possible to engage drive. If the operator leaves the seat, with the transmission engaged and the handbrake disengaged, then the machine will remain in drive but a visual warning will appear on the dashboard.

Operator Present Switch (amber light - Option)

If there is no operator in the seat it is not possible to engage drive. If the operator leaves the seat, with the transmission engaged and the handbrake disengage, then the machine will remain in drive but a visual warning will appear on the dashboard.

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Multi-Purpose Steering Column Switch (4-Speed Transmission)

T2-017_2

1 Turn Signals (Right)

Pull the lever towards you to indicate a right turn. Switch the turn signals off when you have completed the turn. Functions only with the starter switch at position **I**.

2 Turn Signals (Left)

Push the lever away from you to indicate a left turn. Switch the turn signals off when you have completed the turn. Functions only with the starter switch at position **I**.

3 Windscreen Wiper

Rotate the lever barrel to switch the windscreen wipers on and off. The following functions are available (only with the starter switch turned on).

Single Speed (Standard)

0 Off

I On

Two Speed (Optional)

J Intermittent Wipe

0 Off

I Slow

II Fast

4 Windscreen Washer

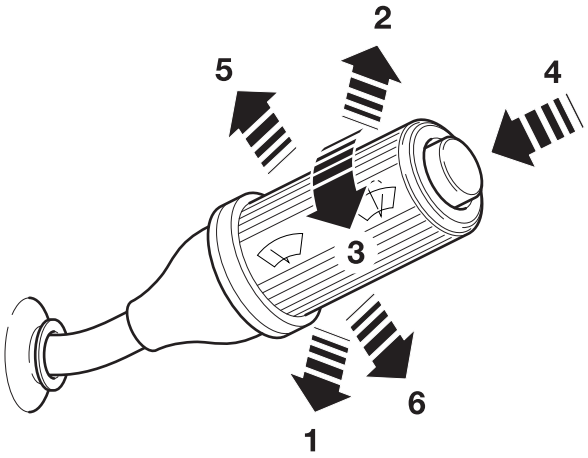
Push the button towards the steering wheel to operate the windscreen washer. Functions only with the starter key at position **I**.

5 Headlights Flash

Lift the lever to flash the headlights. Functions only with the starter switch at position **I**.

6 Headlight/Main Beam

Push the lever down for main beam. Centre position is low beam. Functions only with the parking/head lights on. Switch the high beams off for on-coming vehicles.



146040-1

Fig 47.

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Multi-Purpose Steering Column Switch (6-Speed Transmission)

T2-018_2

1 Turn Signals (Right)

Pull the lever towards you to indicate a right turn. Switch the turn signals off when you have completed the turn. Functions only with the starter switch at position **I**.

2 Turn Signals (Left)

Push the lever away from you to indicate a left turn. Switch the turn signals off when you have completed the turn. Functions only with the starter switch at position **I**.

3 Windscreen Wiper

Rotate the lever barrel to switch the windscreen wipers on and off. The following functions are available (only with the starter switch turned on).

Single Speed (Standard)

0 Off

I On

Two Speed (Optional)

J Intermittent Wipe

0 Off

I Slow

II Fast

4 Windscreen Washer

Push the button towards the steering wheel to operate the windscreen washer. Functions only with the starter key at position **I**.

5 Headlights Flash

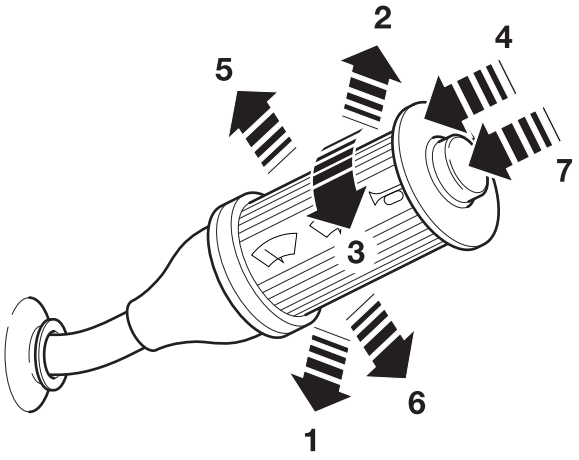
Lift the lever to flash the headlights. Functions only with the starter switch at position **I**.

6 Headlight/Main Beam

Push the lever down for main beam. Centre position is low beam. Functions only with the parking/head lights on. Switch the high beams off for on-coming vehicles.

7 Horn

Push the button to operate the horn. It functions only with the starter switch set to on.



146040-3

Fig 48.

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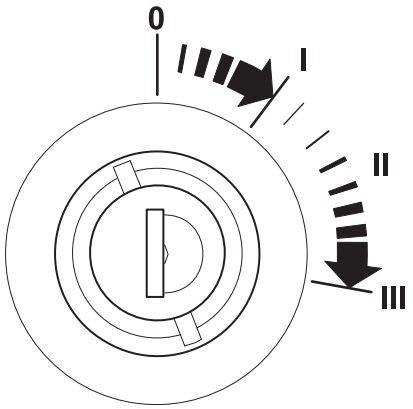
Starter Switch

T2-019_2

This is operated by the starter key. It has four positions. The key can be removed only with the switch set to **0**.

- **0** Turn the key to this position to stop the engine. Make sure the transmission is in neutral, the attachments have been lowered and the park brake is engaged before stopping the engine.
- **I** Putting the switch to this position connects the battery to all the electrical circuits except the lights and the hazard warning circuit. (The lights and hazard warning circuits are permanently live.) The starter key will spring back to this position when it is released from **II** or **III**. At -6°C (21°F), the Cold Start warning light will illuminate to indicate the cold start inlet manifold heater has come on. Refer to ***Warning Lights***.
- **II** This position is not used in this application
- **III** Operates the starter motor to turn the engine.

Note: *Do not operate the starter motor for more than 10 seconds without the engine firing. If the engine fires but does not fully start, do not operate the starter motor for more than 40 seconds. Let the starter motor cool for at least two minutes between starts.*



H04432-4

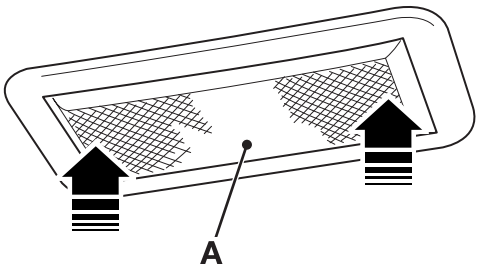
Fig 49.

Cab Interior Light

T2-020

Press either end of the light unit **A** to switch on the cab interior light. Pressing the other end will switch the light off.

Make sure the light is turned off when you intend to leave the machine for a long period of time.



C007130-1

Fig 50.

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Instrument Panel (SD and SF Engine)

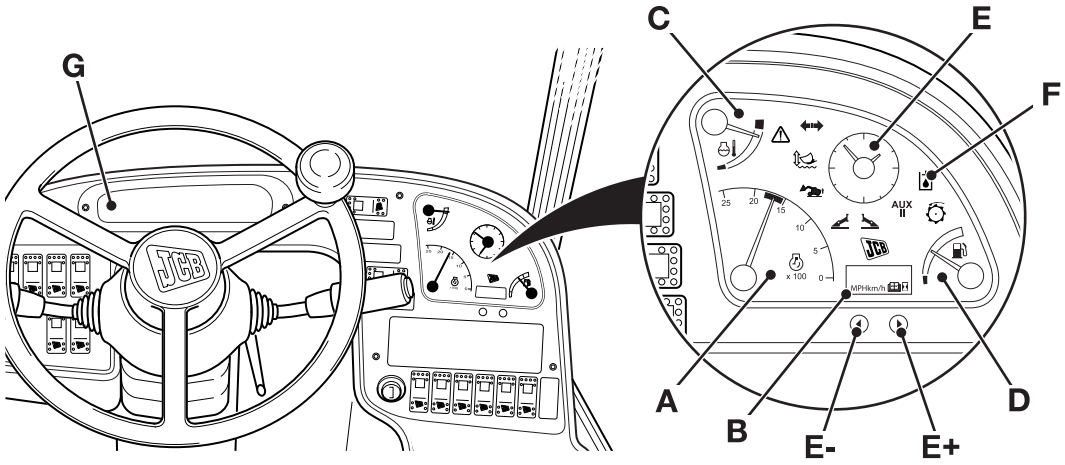


Fig 51.

The instruments and indicator lights are grouped together on an instrument panel. ⇨ *Fig 51. (66)*.

As well as indicator lights for the direction indicators, main beam etc. there are warning lights for various fault conditions. When a warning light comes on an alarm will sound. The only way to cancel the alarm is to set the starter to 'off'.

Do not use the machine if it has a fault condition, or you may damage the engine and/or the transmission.

All instruments and indicators will be turned off when the starter switch is set to off. (But the hazard warning indicator will still operate if the hazard warning lights are switched on.)

Instruments

A Tachometer

Indicates the engine speed in revolutions per minute (**RPM**). The RPM is shown on the outer ring. Each division is 100 RPM. A green band on the scale indicates the RPM which gives best fuel economy. Operate within that band whenever possible.

B Digital Display

⇨ *Digital Display (67)*.

C Coolant Temperature Gauge

Indicates the temperature of the engine coolant. The gauge pointer will gradually swing upwards as the coolant temperature increases. When the coolant temperature enters the red zone, an alarm will sound and the Malfunction Indicator Lamp will illuminate. ⇨ *Warning Cluster (69)*.

Note: *These warnings will remain active until the temperature drops below the red zone. Stop the machine as soon as safety permits and switch OFF the engine. This will allow the temperature to reduce.*

D Fuel Level Gauge

Indicates the level of diesel fuel in the tank. Do not let the tank run dry, or air will enter the fuel system. ⇨ *Refuelling the Machine (172)*.

E Clock

Press the increase (**E+**) or the decrease (**E-**) button to adjust the time. For rapid adjustment, press and hold either button for 5 seconds.

F Warning Lights

⇨ *Instrument Panel (71)*.

G Warning Lights

⇨ *Warning Cluster (69)*.

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Digital Display

P5-2044

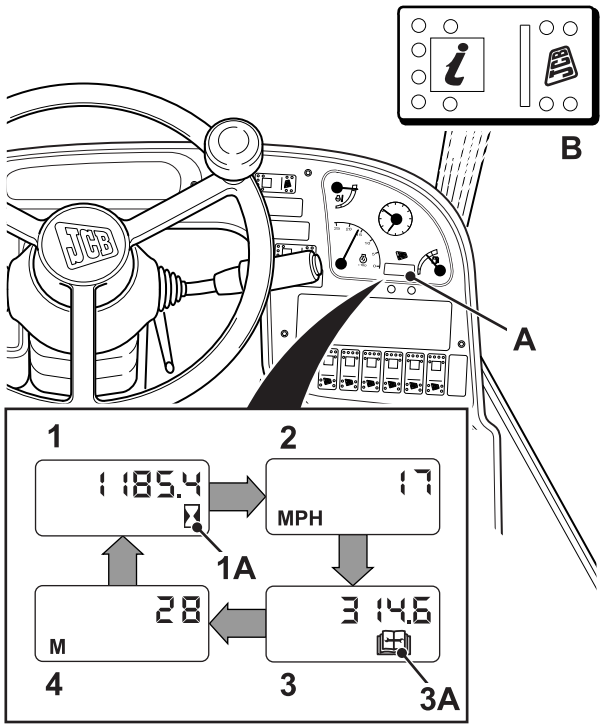
The digital display **A** is located on the right-hand console. ⇒ *Fig 52. (67)*. The digital display contains the following information screens:

1 Engine Hours

2 Ground Speed

3 Time Until Service

4 Trip Distance (if fitted)



432711-11

Fig 52.

Starter Switch OFF

To view the current engine hours, switch ON the side lights. In this mode, the digital display will show the Engine Hour screen (**1**).

Starter Switch ON

As a system check, all of the LCD segments illuminate briefly when the starter switch is set to position **I**.

Press the Information switch **B** to move to the next information screen.

Example of operation:

1 Engine Hours

The total running time of the engine is shown in increments of 0.1 hours. In the example, the current running time is 1185.4 hours.

Note: *When the display is set to the Engine Hour screen, the Hour Glass symbol **1A** comes on.*

2 Ground Speed

Ground speed is shown in either miles per hour (**MPH**) or kilometres per hour (**km/h**). In the example, the current ground speed is 17 MPH.

Press and hold the Information switch **B** for 5 seconds to change between **MPH** and **km/h**.

3 Time Until Service

The Time Until Service is the difference between the next service interval and the current engine hours. In the example, the Time Until Service is 314.6 hours (1500 hours - 1185.4 hours).

Note: *When the display is set to the Time Until Service screen, the Service symbol **3A** comes on.*

Note: *When you complete a machine service, make sure that you reset the value shown on the Time Until Service screen.* ⇒ ***Resetting The Time Until Service Screen (68)***.

4 Trip Distance (if fitted)

The distance is shown in either miles (**M**) or kilometres (**km**), depending upon the units chosen in step 2. In the example, the current Trip Distance is 28 miles.

Press and hold the Information switch **B** for 5 seconds to reset the trip distance.

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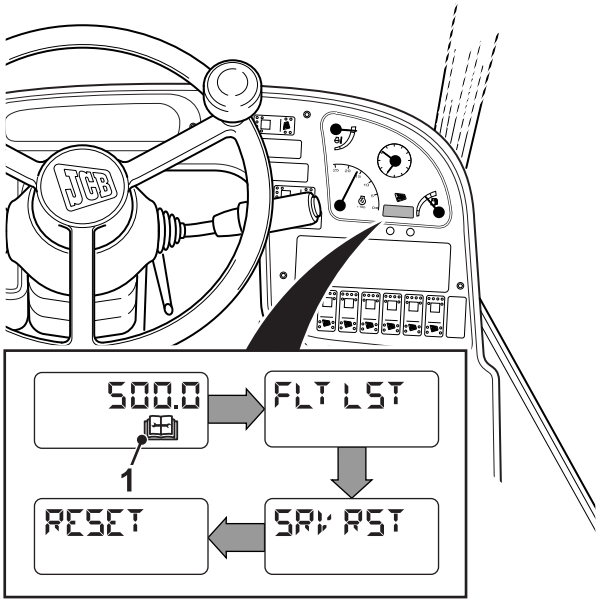
Resetting The Time Until Service Screen

When you complete a machine service, make sure that you reset the value shown on the Time Until Service screen.

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

2 Make sure that the park brake is engaged, then Switch ON the ignition.

3 Quickly push then release the Information button. Repeat as necessary until the Time Until Service screen (with the open book symbol **1**) is shown.



432711-14

Fig 53.

4 Push then hold the Information button for 20 seconds. Release the information button.

5 If necessary, use the left or right arrow button to change the screen from ***FLT LST*** to ***SRV RST***.

6 Push then hold the Information button for one second to go into the ***RESET*** screen. Release the information button.

7 Push then hold the Information button for three seconds to reset the service hours (The word ***RESET*** flashes once). Release the information button.

8 Push then hold the Information button for one second to exit the ***RESET*** screen. Release the information button.

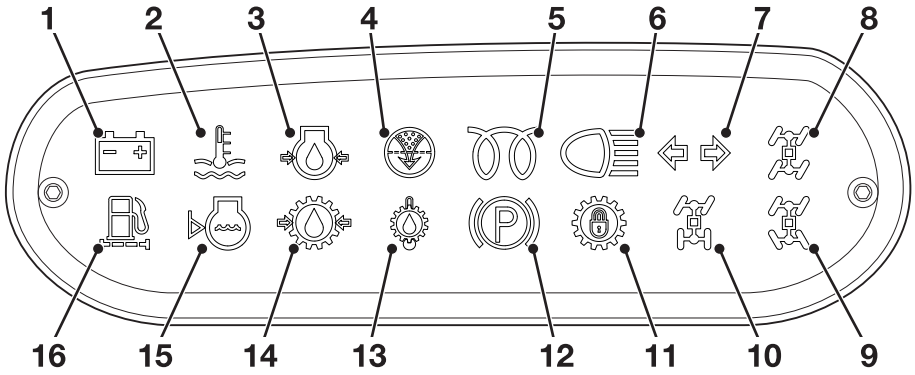
9 Use the left or right arrow buttons to move to ***EXIT***.

10 Quickly push then release the Information button to go to the normal operation mode.

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Warning Lights

Warning Cluster



795634-1

Fig 54.

When the starter switch is set to position **I**:

- An audible alarm will sound. The alarm should stop when the engine is started. ⇨ *Starting the Engine (🗋 129)*.
- All the warning lights should illuminate briefly as a bulb and system check.

⚠ CAUTION

If any of the audible/visual warnings operate while the engine is running, stop the engine as soon as it is safe to do so and rectify the fault.

4-2-1-2

1 No Charge

Audible/Visual. Lights if the battery charging circuit fails while the engine is running. The light should go out a few seconds after the engine is started.

2 Not used.

3 Engine Oil Pressure Low

Audible/Visual. Operates if the engine oil pressure drops too far. The light should go out when the engine is started.

4 Air Filter Blocked

Audible/Visual. Lights if the engine air filter blocks up.

5 Cold Start

Visual Only. ⇨ *Starter Switch (🗋 65)*.

6 Main Beam On

Visual only. Lights up when the headlight main beams are switched on.

⇨ *Multi-Purpose Steering Column Switch (4-Speed Transmission) (🗋 63)*

⇨ *Multi-Purpose Steering Column Switch (6-Speed Transmission) (🗋 64)*

7 Direction Indicators

Visual only. Flashes with the direction indicators.

⇨ *Multi-Purpose Steering Column Switch (4-Speed Transmission) (🗋 63)*

⇨ *Multi-Purpose Steering Column Switch (6-Speed Transmission) (🗋 64)*

8 Crab Steer Engaged

Visual only. ⇨ *Electronic Steer Mode Selector (🗋 57)*.

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9 4-Wheel Steer Engaged

Visual only. ⇨ *Electronic Steer Mode Selector (57)*.

10 2-Wheel Steer Engaged

Visual only. ⇨ *Electronic Steer Mode Selector (57)*.

11 Torque Lock

Visual only. ⇨ *Torque Lock (6-Speed Transmission) (84)*.

12 Park Brake Engaged

Audible/Visual. ⇨ *Park Brake Lever (51)*.

13 Transmission Oil Temperature High

Audible/Visual. Lights if the transmission oil temperature rises too far.

14 Transmission Oil Pressure Low

Audible/Visual. Lights if the transmission oil pressure drops too far. The light should go out when the engine is started.

15 Low Level Coolant Indicator

Audible/Visual. Lights up when the coolant level is low, top up as soon as it safe to do so.

16 Water in Fuel Indicator

Audible/Visual. Lights up when there is water in the fuel system. Drain the water separator and engine filter.

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Instrument Panel

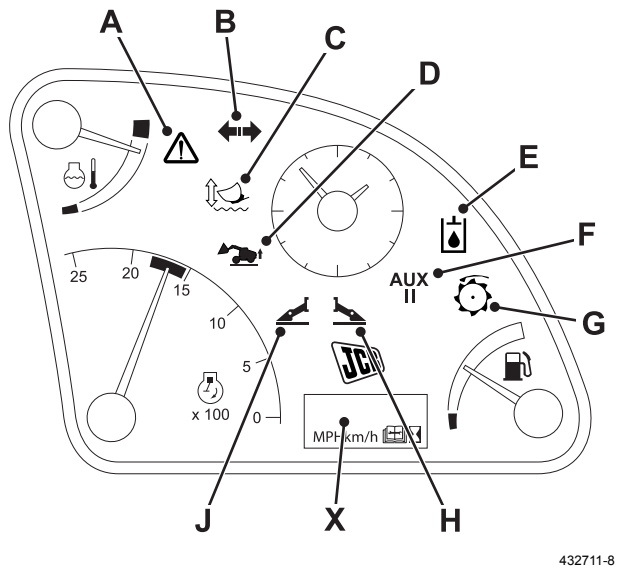


Fig 55.

A Malfunction Indicator Lamp (MIL)

Amber/Red light. The MIL light comes on to show that a system error has been detected. Depending upon the type of error the digital display (**X**) will display the message **STOP NOW** or an error code (for example **D001**).

- Red Light (**STOP NOW**). The light comes ON (and an audible alarm sounds) to indicate that the machine will be damaged unless it is stopped. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB Distributor.
- Amber light (Error Code). The light comes ON (and an audible alarm sounds) to indicate that the machine function will be impaired until the error is rectified. Take the machine for maintenance/repair as soon as convenient.

Note: *Press the Information switch to acknowledge an error code. The audible alarm will stop.*

B Trailer Indicators On

Green flashing light. The light flashes with the trailer direction indicators (if fitted).

C Smooth Ride System Engaged (if fitted)

Green Light. The light comes on when the Smooth Ride System is engaged. ⇨ ***Smooth Ride System (SRS) (138)***.

D Not Used

E Hydraulic Variflow Control System HVCS (if fitted)

Red Light. The light comes on when the hydraulic oil temperature rises above normal working temperature. The machine will automatically limit hydraulic performance. When the hydraulic oil has cooled sufficiently, the light goes off and normal hydraulic performance will be restored.

F AUX II Engaged (if fitted)

Green Light. The light comes on when AUX II is engaged. ⇨ ***Single Lever Control (Thumb Wheel Type and Basic Thumb Wheel Type) (95)***.

G Constant Flow Auxiliary Engaged (if fitted)

Green Light. The light comes on when Constant Flow Auxiliary is engaged. ⇨ ***Single Lever Control (Thumb Wheel Type and Basic Thumb Wheel Type) (95)***.

H Right-Hand Stabiliser Indicator (if fitted)

Green Light. The light comes on when the right-hand stabiliser is in the down position and the weight of the machine is supported. ⇨ ***Stabiliser Control Option (100)***.

The light will flash if the leg is in the down position but the machine weight is not fully supported. Either lower the load on the boom or reposition the machine on firm ground (excluding 540-170 machines).

J Left-Hand Stabiliser Indicator (if fitted)

Green Light. The light comes on when the left-hand stabiliser is in the down position and the weight of the machine is supported. ⇨ ***Stabiliser Control Option (100)***.

The light will flash if the leg is in the down position but the machine weight is not fully supported. Either lower the load on the boom or reposition the machine on firm ground. (excluding 540-170 machines).

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Instrument Panel (SE Engine)

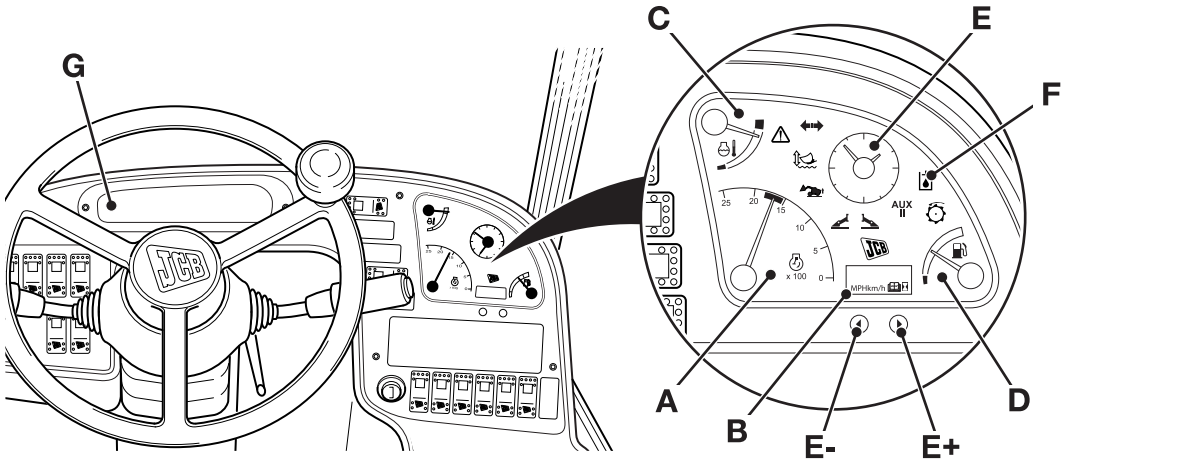


Fig 56.

The instruments and indicator lights are grouped together on an instrument panel. ⇨ *Fig 56. (🗋 72)*.

As well as indicator lights for the direction indicators, main beam etc. there are warning lights for various fault conditions. When a warning light comes on an alarm will sound. The only way to cancel the alarm is to set the starter to 'off'.

Do not use the machine if it has a fault condition, or you may damage the engine and/or the transmission.

All instruments and indicators will be turned off when the starter switch is set to off. (But the hazard warning indicator will still operate if the hazard warning lights are switched on.)

Instruments

A Tachometer

Indicates the engine speed in revolutions per minute (**RPM**). The RPM is shown on the outer ring. Each division is 100 RPM. A green band on the scale indicates the RPM which gives best fuel economy. Operate within that band whenever possible.

B Hourmeter

Records the total running time of the engine. The total running time of the engine is shown in increments of 0.1 hours (i.e. 1185.4 hours).

C Coolant Temperature Gauge

Indicates the temperature of the engine coolant. The gauge pointer will gradually swing upwards as the coolant temperature increases. When the coolant temperature enters the red zone, an alarm will sound and the Malfunction Indicator Lamp will illuminate. ⇨ *Warning Cluster (🗋 81)*.

Note: *These warnings will remain active until the temperature drops below the red zone. Stop the machine as soon as safety permits and switch OFF the engine. This will allow the temperature to reduce.*

D Fuel Level Gauge

Indicates the level of diesel fuel in the tank. Do not let the tank run dry, or air will enter the fuel system. ⇨ *Refuelling the Machine (🗋 172)*.

E Clock

Press the increase (**E+**) or the decrease (**E-**) button to adjust the time. For rapid adjustment, press and hold either button for 5 seconds.

F Warning Lights

⇨ *Instrument Panel (🗋 83)*.

G Warning Lights

⇨ *Warning Cluster (🗋 81)*.

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Vehicle Status Screen

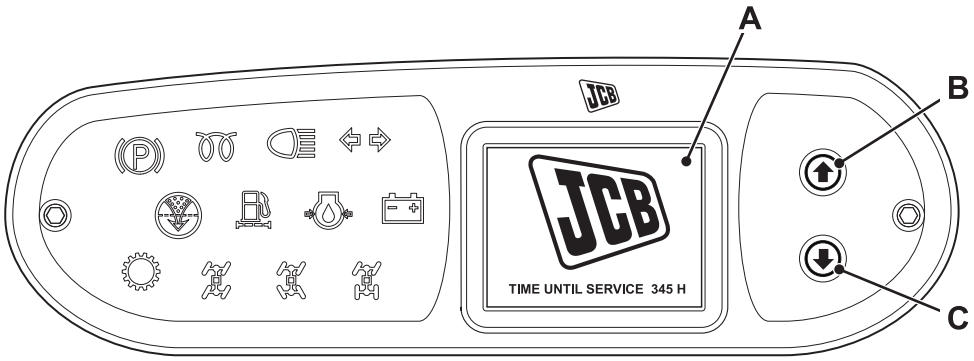


Fig 57.

The Vehicle Status Screen **A** contains the following information screens:

- ⇒ *Transmission Screen (Excluding 550/560-80 Machines) (🗋 74)*
- ⇒ *Transmission Screen (550/560-80 Machines) (🗋 75)* ⇒ *Fuel Usage Screen (🗋 76)*
- ⇒ *Setup Menu Screen (No. 1) (🗋 76)*
  - ⇒ *Setup Menu Screen (No. 2) (🗋 77)*
  - ⇒ *Active Faults Screen (🗋 78)*
  - ⇒ *S/W Versions Screen (🗋 79)*
  - ⇒ *H/W Versions Screen (🗋 79)*
- ⇒ *Options Screen (🗋 80)*

Starter Switch OFF

To view the Time Until Service, switch ON the side lights. ⇒ *Switches (🗋 58)*. In this mode, the hourmeter will also be active. ⇒ *Instrument Panel (SE Engine) (🗋 72)*.

Note: *Time Until Service indicates the difference (in hours) between the next service interval and the current engine hours.*

Starter Switch ON

As a system check, all of the LCD segments illuminate briefly when the starter switch is set to position **I**. The JCB logo and Time Until Service are shown until:

- The Information switch is pressed. ⇒ *Fig 58. (🗋 73)*. The Transmission Screen is then displayed. Press the switch again to move to the next screen. The screens appear in the order shown.
- The engine is started. The Transmission Screen is automatically displayed.
- The system detects a critical error (STOP NOW). The Active Faults Screen is automatically displayed.
- The Up **B** or Down **C** buttons are pressed. The Setup Menu Screen (No. 1) is displayed.

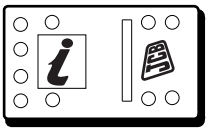


Fig 58.

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Transmission Screen (Excluding 550/560-80 Machines)

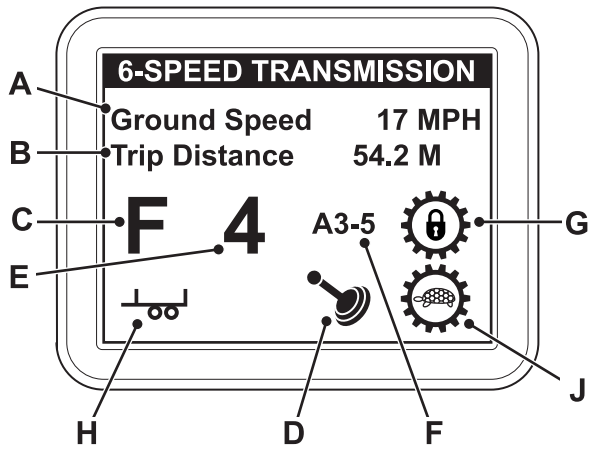


Fig 59.

Note: *Items **D-J** are fitted to 6-Speed transmission machines only.*

A Ground Speed

Ground speed is shown in either miles per hour (**MPH**) or kilometres per hour (**km/h**). In the example, the current ground speed is 17 MPH.

Press the up/down buttons to change between **MPH** and **km/h**. ⇨ *Fig 57. (🗋 73)*.

B Trip Distance

The distance is shown in either miles (**M**) or kilometres (**km**). In the example, the current Trip Distance is 54.2 miles.

Press the up/down buttons to change between **M** and **km**. ⇨ *Fig 57. (🗋 73)*.

Press and hold the Information switch for 5 seconds to reset the trip distance. ⇨ *Fig 58. (🗋 73)*.

C Selected Direction

The selected direction is shown as a letter, either:

F (Forward)

N (Neutral)

R (Reverse)

D Joystick Direction Control

When the joystick control is active, the icon will come on.

E Selected Gear

The selected gear is shown as a number ranging from **1** to **6**.

F Requested Gear

Indicates the gear selected by the gear shift lever. When the column switch is rotated to position `A', the screen will also show the range of auto gear (i.e. **A3-5** or **A4-6**).

G Torque Lock

When Torque Lock is active, the icon will come on.



When Torque Lock is disabled (Option in Field Mode only), the symbol will appear as shown.

H Transmission Mode

The selected transmission mode is shown as a symbol, either:



ECO Road Mode



Power Road Mode



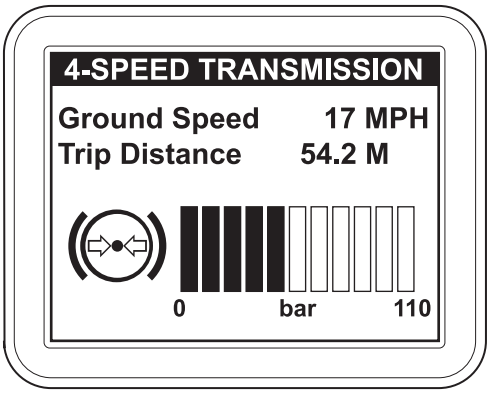
Field Mode

J Kickdown

When kickdown is active, the icon will come on.

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Transmission Screen (550/560-80 Machines)



T008003

Fig 60.

A Ground Speed

Ground speed is shown in either miles per hour (**MPH**) or kilometres per hour (**km/h**). In the example, the current ground speed is 17 MPH.

Press the up/down buttons to change between **MPH** and **km/h**. ⇨ *Fig 57. (73)*.

B Trip Distance

The distance is shown in either miles (**M**) or kilometres (**km**). In the example, the current Trip Distance is 54.2 miles.

Press the up/down buttons to change between **M** and **km**. ⇨ *Fig 57. (73)*.

Press and hold the Information switch for 5 seconds to reset the trip distance. ⇨ *Fig 58. (73)*.

C Power Brake System Pressure

Displays the power brake system pressure.

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Fuel Usage Screen

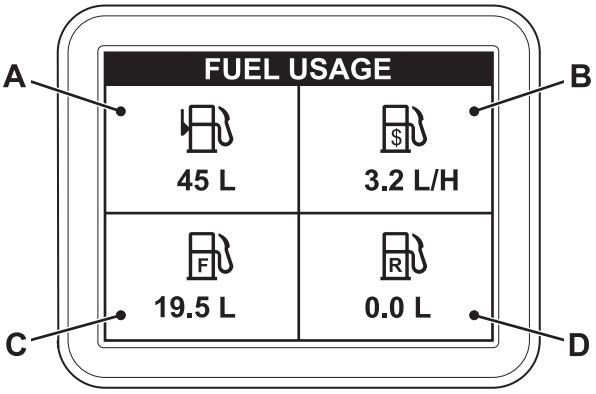


Fig 61.

A Fuel Remaining

Shows the amount of fuel remaining in litres (**L**).

B Average Fuel Consumption

Shows the average fuel consumption in litres/hour (**L/H**).

C Fuel Used Since Last Fill

Shows the amount of fuel used in litres (**L**), since the machine was last refuelled.

D Fuel Used Since Last Reset

Shows the amount of fuel used in litres (**L**), since the ***Fuel Usage*** screen was last reset.

Press and hold the Information switch for 5 seconds to reset Fuel Used Since Last Reset. ⇨ *Fig 58. (🗋 73)*.

Setup Menu Screen (No. 1)

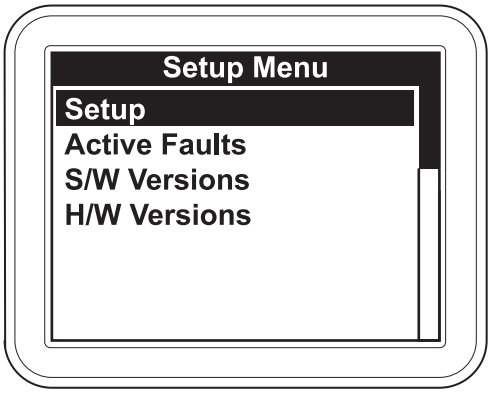


Fig 62.

Setup Menu Screen (No. 1) provides access to further information screens. These are:

⇨ *Setup Menu Screen (No. 2) (🗋 77)*
⇨ *Active Faults Screen (🗋 78)*
⇨ *S/W Versions Screen (🗋 79)*
⇨ *H/W Versions Screen (🗋 79)*

Use the up and down buttons to navigate through the list. When the required option is highlighted, press and hold the information button for five seconds.

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Setup Menu Screen (No. 2)

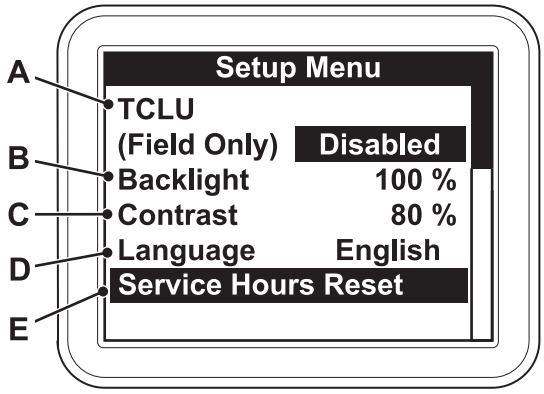


Fig 63.

Use this screen to access the functions described below. Use the up and down buttons to navigate through this list.

A Torque Lock TCLU (Enabled or Disabled)

When this option is highlighted, press and hold the information button for three seconds to change the current setting. ⇨ *Fig 58. (73)*.

Depending upon the current mode, Torque Lock (TCLU) will be enabled or disabled. This setting applies to Field Mode only. When the machine operates in one of the two Road Modes (ECO or Power), Torque Lock will automatically be enabled.

To acknowledge the new setting, press and hold the information button for three seconds.

B Backlighting (Increase or Decrease)

When this option is highlighted, press and hold the information button for three seconds. ⇨ *Fig 58. (73)*.

Use the up and down buttons to adjust the setting. ⇨ *Fig 57. (73)*.

To acknowledge the new setting, press and hold the information button for three seconds.

C Contrast (Increase or Decrease)

When this option is highlighted, press and hold the information button for three seconds. ⇨ *Fig 58. (73)*.

Use the up and down buttons to adjust the setting. ⇨ *Fig 57. (73)*.

To acknowledge the new setting, press and hold the information button for three seconds.

D Language

When this option is highlighted, press and hold the information button for three seconds. ⇨ *Fig 58. (73)*.

Use the up and down buttons to cycle through the list of available languages. ⇨ *Fig 57. (73)*.

To acknowledge the new setting, press and hold the information button for three seconds.

E Service Hours Reset

When this option is highlighted, press and hold the information button for three seconds then switch OFF the ignition.

Note: *When you next switch ON the ignition, you will find that the Service Hours have reset.*

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Active Faults Screen

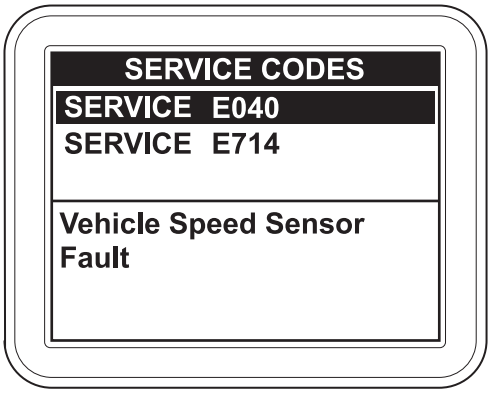


Fig 64.

Note: *When a system fault is detected, the LCD will automatically switch to the Active Fault screen.*

System faults are displayed as messages on the LCD. Each message consists of two parts.

Example: **SERVICE D001**
1 2

Note: *A long description of the highlighted fault code* ***2*** *is provided at the bottom of the screen.*

1 The level of severity, either Critical or Warning.

a Critical Fault (**STOP NOW**) - Indicates that the machine will be damaged unless it is stopped. Critical faults can not be acknowledged.

When a critical fault is detected, the Red MIL light comes ON (and an audible alarm sounds) to indicate that the machine will be damaged unless it is stopped. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB Distributor.

b Warning Fault (**SERVICE**) - Indicates that the machine function will be impaired until the error is rectified.

Press the Information switch to acknowledge a **SERVICE** error. ⇨ *Fig 58. (🗋 73)*. The audible alarm will stop. The LCD will return to the previously active screen. If a new warning occurs or a warning clears and re-occurs then the **SERVICE** message is displayed again.

When warning faults occur, the Amber MIL light comes ON (and an audible alarm sounds) to indicate that the machine function will be impaired until the error is rectified. Take the machine for maintenance/repair as soon as convenient.

2 The fault code. This code is specific to the active fault and can be used to aid fault diagnosis.

The screen should automatically update when a fault has been rectified. If the screen does not update, press and hold the Information button to refresh the screen.

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S/W Versions Screen

⇨ *Fig 65. (79)*. This screen displays the software version for all ECUs (electronic control units) on the network.

Use the up and down buttons to cycle through the list of ECUs. The software version of the highlighted ECU is shown at the bottom of the screen.

Note: *The values shown can not be adjusted via the Vehicle Status Screen. For further information on adjusting these values, contact your JCB Distributor.*

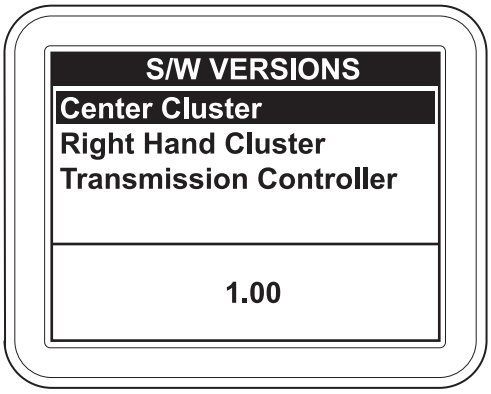


Fig 65.

H/W Versions Screen

⇨ *Fig 66. (79)*. This screen displays the hardware version for all ECUs (electronic control units) on the network.

Use the up and down buttons to cycle through the list of ECUs. The hardware version of the highlighted ECU is shown at the bottom of the screen.

Note: *The values shown can not be adjusted via the Vehicle Status Screen. For further information on adjusting these values, contact your JCB Distributor.*

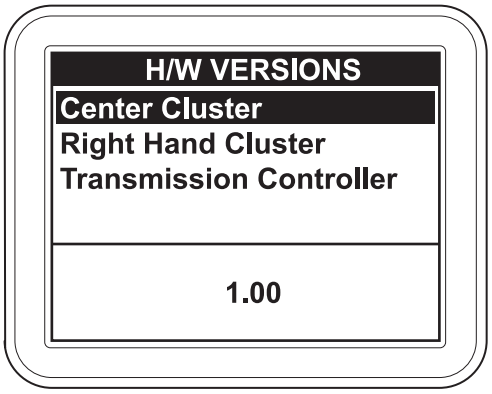


Fig 66.

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Options Screen

⇒ *Fig 67. (80)*. This screen displays various system settings.

Use the up and down buttons to cycle through the list. The current value of the highlighted setting is shown at the bottom of the screen.

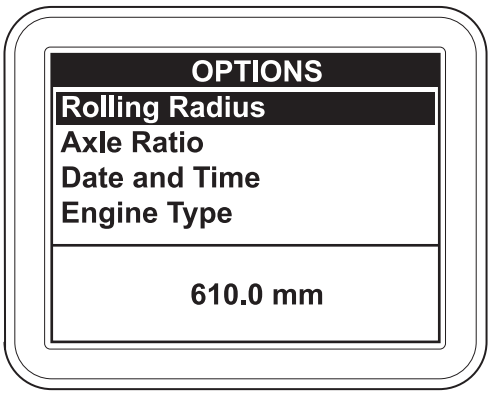


Fig 67.

Note: *The values shown can not be adjusted via the Vehicle Status Screen. For further information on adjusting these values, contact your JCB Distributor.*

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Warning Lights

Warning Cluster

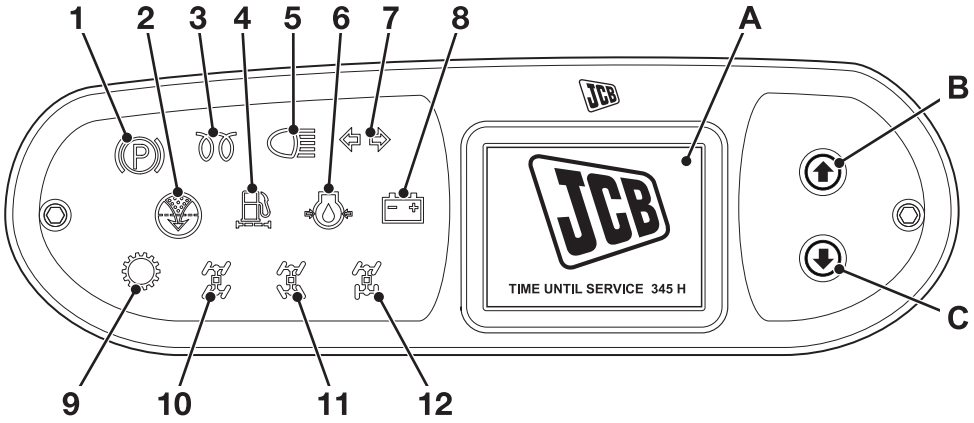


Fig 68.

When the starter switch is set to position **I**:

- An audible alarm will sound. The alarm should stop when the engine is started. ⇨ *Starting the Engine (🗋 129)*.
- All the warning lights should illuminate briefly as a bulb and system check.

⚠ CAUTION

If any of the audible/visual warnings operate while the engine is running, stop the engine as soon as it is safe to do so and rectify the fault.

4-2-1-2

1 Park Brake Engaged

Audible/Visual (Red light). ⇨ *Park Brake Lever (🗋 51)*.

2 Air Filter Blocked

Audible/Visual (Red light). Lights if the engine air filter blocks up. The Vehicle Status Screen will display an error message. ⇨ *Vehicle Status Screen (🗋 73)*.

3 Cold Start

Visual Only (Amber light). ⇨ *Starter Switch (🗋 65)*.

4 Water in Fuel Indicator

Audible/Visual (Amber light). Lights up when there is water in the fuel system. The Vehicle Status Screen will display an error message. ⇨ *Vehicle Status Screen (🗋 73)*.

5 Main Beam On

Visual only (Blue light). Lights up when the headlight main beams are switched on.

⇨ *Multi-Purpose Steering Column Switch (4-Speed Transmission) (🗋 63)*

⇨ *Multi-Purpose Steering Column Switch (6-Speed Transmission) (🗋 64)*

6 Engine Oil Pressure Low

Audible/Visual (Red light). Operates if the engine oil pressure drops below the normal working pressure. The Vehicle Status Screen will display an error message. ⇨ *Vehicle Status Screen (🗋 73)*.

7 Direction Indicators

Visual only (Green light). Flashes with the direction indicators.

⇨ *Multi-Purpose Steering Column Switch (4-Speed Transmission) (🗋 63)*

⇨ *Multi-Purpose Steering Column Switch (6-Speed Transmission) (🗋 64)*

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8 No Charge

Audible/Visual (Red light). Lights if the battery charging circuit fails while the engine is running. The Vehicle Status Screen will display an error message. ⇨ *Vehicle Status Screen (73)*.

9 Transmission Fault

Visual only (Red light). Lights if the transmission oil temperature increases above the normal working temperature or if the oil pressure drops below the normal working pressure. The Vehicle Status Screen will display an error message. ⇨ *Vehicle Status Screen (73)*.

10 Crab Steer Engaged

Visual only (Green light). ⇨ *Electronic Steer Mode Selector (57)*.

11 4-Wheel Steer Engaged

Visual only (Green light). ⇨ *Electronic Steer Mode Selector (57)*.

12 2-Wheel Steer Engaged

Visual only (Green light). ⇨ *Electronic Steer Mode Selector (57)*.

A Vehicle Status Screen

⇨ *Vehicle Status Screen (73)*.

B Up Button for Vehicle Status Screen

⇨ *Vehicle Status Screen (73)*.

C Down Button for Vehicle Status Screen

⇨ *Vehicle Status Screen (73)*.

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Instrument Panel

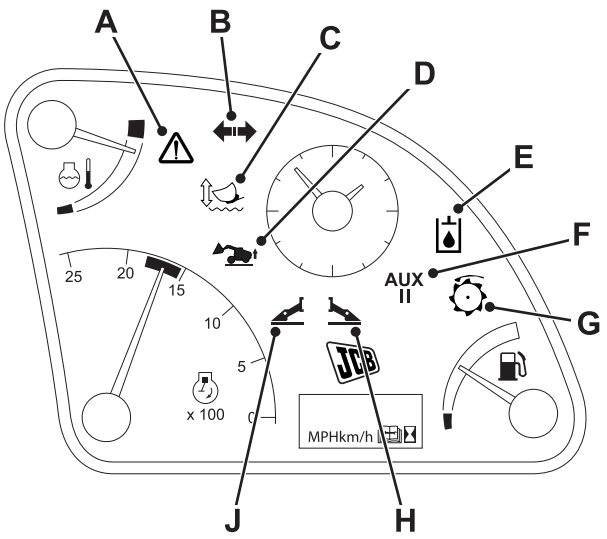


Fig 69.

A Malfunction Indicator Lamp (MIL)

Amber/Red light. The MIL light comes on to show that a system error has been detected. Depending upon the type of error the Vehicle Status screen will display the message **STOP NOW** or **SERVICE**. ⇒ *Vehicle Status Screen (73)*.

- Red Light (**STOP NOW**). The light comes ON (and an audible alarm sounds) to indicate that the machine will be damaged unless it is stopped. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB Distributor.
- Amber light (**SERVICE**). The light comes ON (and an audible alarm sounds) to indicate that the machine function will be impaired until the error is rectified. Take the machine for maintenance/repair as soon as convenient.

Note: *Press the Information switch to acknowledge a* ***SERVICE*** *error. The audible alarm will stop.*

B Trailer Indicators On

Green flashing light. The light flashes with the trailer direction indicators (if fitted).

C Smooth Ride System Engaged (if fitted)

Green Light. The light comes on when the Smooth Ride System is engaged. ⇒ *Smooth Ride System (SRS) (138)*.

D Not Used

E Hydraulic Variflow Control System HVCS (if fitted)

Red Light. The light comes on when the hydraulic oil temperature rises above normal working temperature. The machine will automatically limit hydraulic performance. When the hydraulic oil has cooled sufficiently, the light goes off and normal hydraulic performance will be restored.

F AUX II Engaged (if fitted)

Green Light. The light comes on when AUX II is engaged. ⇒ *Single Lever Control (Thumb Wheel Type and Basic Thumb Wheel Type) (95)*.

G Constant Flow Auxiliary Engaged (if fitted)

Green Light. The light comes on when Constant Flow Auxiliary is engaged. ⇒ *Single Lever Control (Thumb Wheel Type and Basic Thumb Wheel Type) (95)*.

H Right-Hand Stabiliser Indicator (if fitted)

Green Light. The light comes on when the right-hand stabiliser is in the down position and the weight of the machine is supported. ⇒ *Stabiliser Control Option (100)*.

The light will flash if the leg is in the down position but the machine weight is not fully supported. Either lower the load on the boom or reposition the machine on firm ground (excluding 540-170 machines).

J Left-Hand Stabiliser Indicator (if fitted)

Green Light. The light comes on when the left-hand stabiliser is in the down position and the weight of the machine is supported. ⇒ *Stabiliser Control Option (100)*.

The light will flash if the leg is in the down position but the machine weight is not fully supported. Either lower the load on the boom or reposition the machine on firm ground (excluding 540-170 machines).

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Torque Lock (6-Speed Transmission)

Description

T2-035

This feature is designed to eliminate torque converter slip when roading, providing improved fuel consumption and machine road performance. Because the torque converter ratio remains 1-1 in top gear this does not alter the overall top speed.

The Torque Lock feature is automatically engaged by the transmission Electronic Control Unit (ECU) hydraulically engaging a clutch plate in the converter at a pre determined machine road speed and engine RPM preventing torque converter slip.

This feature would normally only engage when the machine is driven at road speeds, and will disengage automatically when the machine or engine speed fall below these settings. Selecting reverse or engaging the park brake will also disconnect the lockup.

Operation

When **A** is selected on the column switch the machine will engage 3rd gear (when operating in Power Road Mode) or 4th gear (when operating in ECO Road Mode). Higher gears and the lock up will engage automatically at the predetermined settings.

Note: *Lock up operates in 5th and 6th gear only. The Torque Lock warning light comes on when the torque convertor is locked up.* ⇨ ***Transmission Screen (Excluding 550/560-80 Machines) (74)***.

When the foot throttle pedal is in the up position e.g. descending hills in a low gear, the machine will hold 4th or 5th gear and not change up.

Because the ECU is programmed only to lock up when it senses minimal torque converter slip (the difference between the engine RPM and road speed), with practice the lock up engagement can be brought in earlier by momentarily releasing the foot throttle to reduce the engine rpm then re-applying once the lock up is felt to occur.

It is good practice to endeavour to drive the machine on the road with the torque converter locked up as further fuel saving can be achieved over the normal torque converter operation.

Disabling Torque Lock (Field Mode Only)

It is possible to disable Torque Lock in Field Mode. ⇨ ***Setup Menu Screen (No. 2) (77)***.

Note: *When the machine operates in one of the two Road Modes (ECO or Power), Torque Lock will automatically be enabled.*

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Air Conditioning and Cab Heater Controls

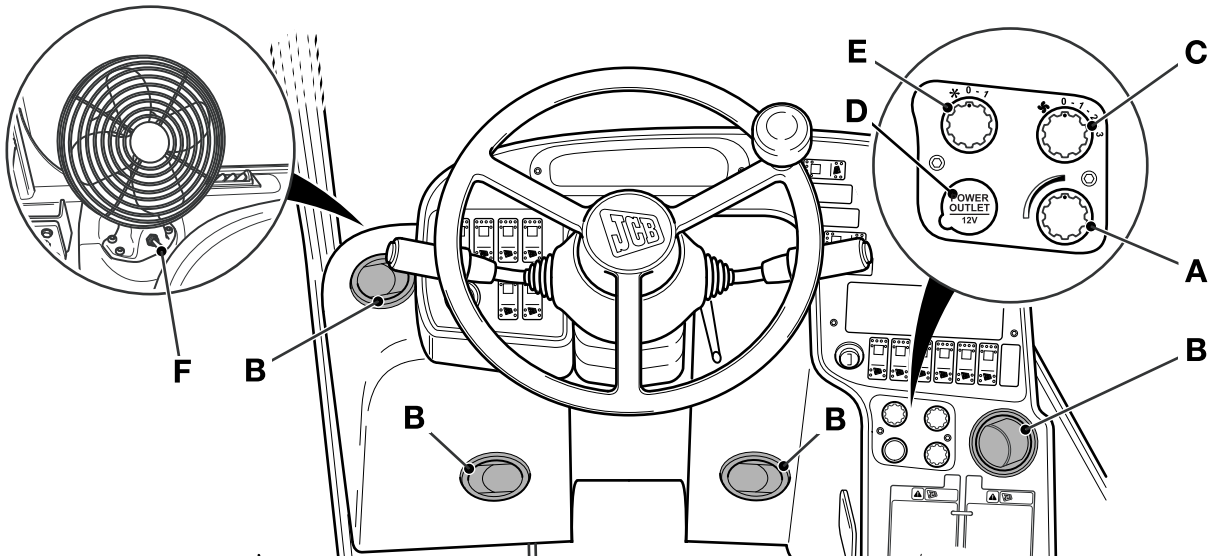


Fig 70.

Cab Heater Controls

Heated or unheated air is provided from a heater unit which includes a two- or three-speed fan (depending on machine specification). The air can be directed to the windscreen and/or the cab interior.

Cab Heater Temperature Control

Turn knob **A** in clockwise to increase the temperature. To reduce the temperature turn counterclockwise.

Cab/Windscreen Heating

Position vents **B** as required to direct air.

Cab Heater/Air Conditioning Fan

Turn knob **C** clockwise to position **1** to turn the fan on. Turn further to positions **2** or **3** increase speed. Functions only with the starter switch set to on.

Auxiliary Power Socket

The socket **X** supplies a 12 Volt DC power supply to electrical accessories (from the battery). Only connect items which are compatible with the power rating of the socket (Refer to ***Electrical System, Fuses***) and have the correct plug.

Always operate the engine during prolonged use of electrical accessories, otherwise the battery can discharge.

Make sure that the socket cap is closed when the socket is not in use.

Air Conditioning Controls (if fitted)

To provide cool air in warm climates and during hot seasons the air conditioning system delivers cool dehumidified air into the cab.

Air conditioning reduces moisture from the air and can be used to demist windows quickly in damp weather. Used in conjunction with the heater, it also makes the interior of the cab warm and dry.

Important: *Operate the air conditioning for at least 10 minutes per month.*

Before starting the engine make sure the air conditioning is switched off.

Turn knob **E** clockwise to position **1** to turn the air conditioning on. To obtain best results from the air conditioning system ensure that all doors and windows are closed.

Operate the fan control as previously described for operator comfort.

Face-Level Fan (if fitted)

Switch on or off at **F**.

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Operating Levers

Introduction

T2-021_2

⚠ WARNING

Controls

You or others can be killed or seriously injured if you operate the control levers from outside the machine. Operate the control levers only when you are correctly seated.

0179_2

⚠ WARNING

Boom/Machine Travel

Operating the boom while you travel can cause accidents. You will not have total control of the machine. Never operate the boom when you travel.

5-1-5-2_2

⚠ WARNING

Electrical Power Cables

You could be electrocuted or badly burned if you get the machine or its attachments too close to electrical power cables.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near electric power lines.

Before you start using the machine, check with your electricity supplier if there are any buried power cables on the site.

There is a minimum clearance required for working beneath overhead power cables. You must obtain details from your local electricity supplier.

2-2-5-4

⚠ WARNING

Make sure it is clear overhead before raising the boom. Keep an adequate safe distance from all electrical power lines. Contact your local power company for safety procedures.

5-2-1-5_1

⚠ WARNING

Release the boom raise lever as soon as the boom is fully raised. Holding the control in the lift position can result in carriage slowly crowding back.

5-2-1-11

The levers are spring-loaded to their central hold positions. The speed of movement of the associated hydraulic rams depends on how far you move a lever - the further you move the lever, the faster the ram action.

The rams will stay in any position until you move them with the levers or switches.

Control Layouts

⚠ WARNING

Control lever/switch action may vary on machines, instructional labels near the levers/switches show by symbols, which levers/switches cause what actions. Before operating control levers/switches check the instructional label to make sure you select the desired action.

5-2-2-9_2

Control levers and switches may vary on machines. The machine may be fitted with any of the following control layouts.

1 Boom and Carriage Controls

- **a** Dual Lever Control (Loading Pattern)
- **b** Dual Lever Control (Placing Pattern)
- **c** Single Lever Control (Push Button Type)
- **d** Single Lever Control (Thumb Wheel Type)
- **e** Single Lever Control (Basic Thumb Wheel Type) (Construction machines only)
- **f** Servo Controls

2 Auxiliary Controls

3 Chassis Levelling (Sway) Controls

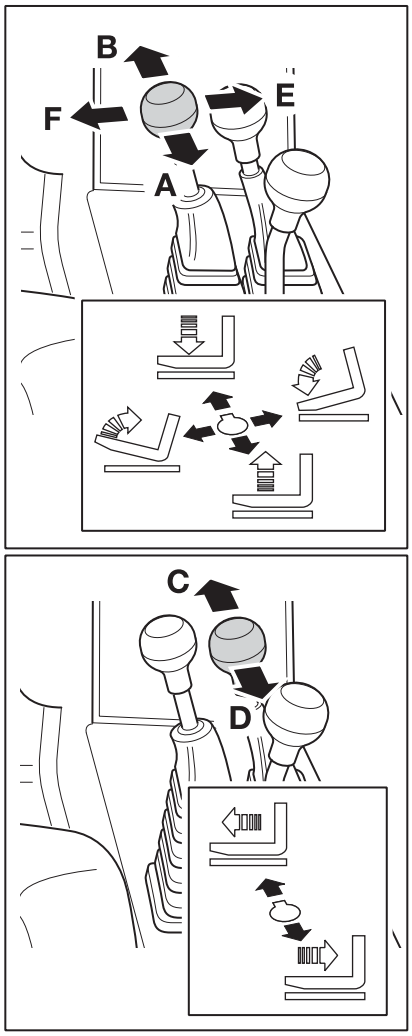
4 Stabiliser Controls

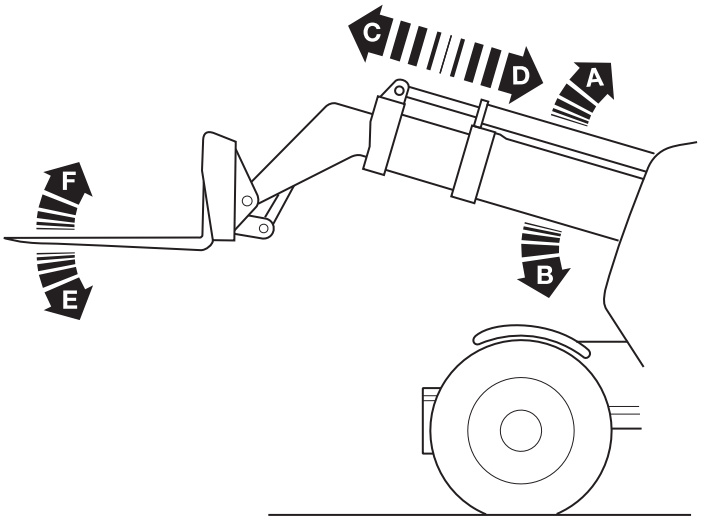
The following pages describe the operation of each layout. Make sure your refer to the correct description.

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Boom and Carriage Controls

Dual Lever Control (Loading Pattern)





C094230

Fig 71.

Important: *3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. Fully retract the boom at least once every day. Refer to* ***Boom, Re-phasing of 3-Stage Booms****.*

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

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Dual Lever Control (Placing Pattern)

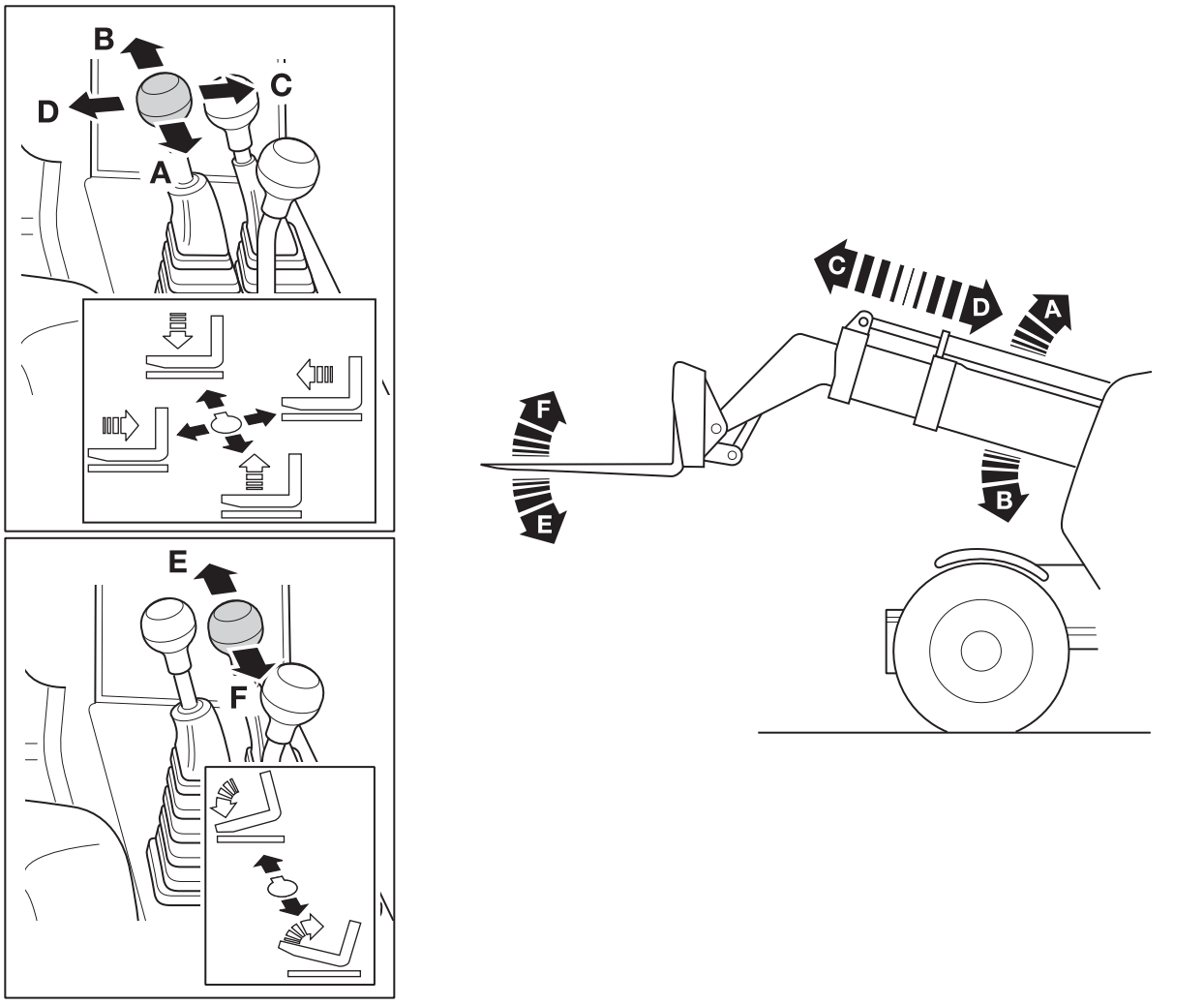


Fig 72.

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

Important: *3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. Fully retract the boom at least once every day. Refer to* ***Boom, Re-phasing of 3-Stage Booms****.*

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Single Lever Control (Push Button Type)

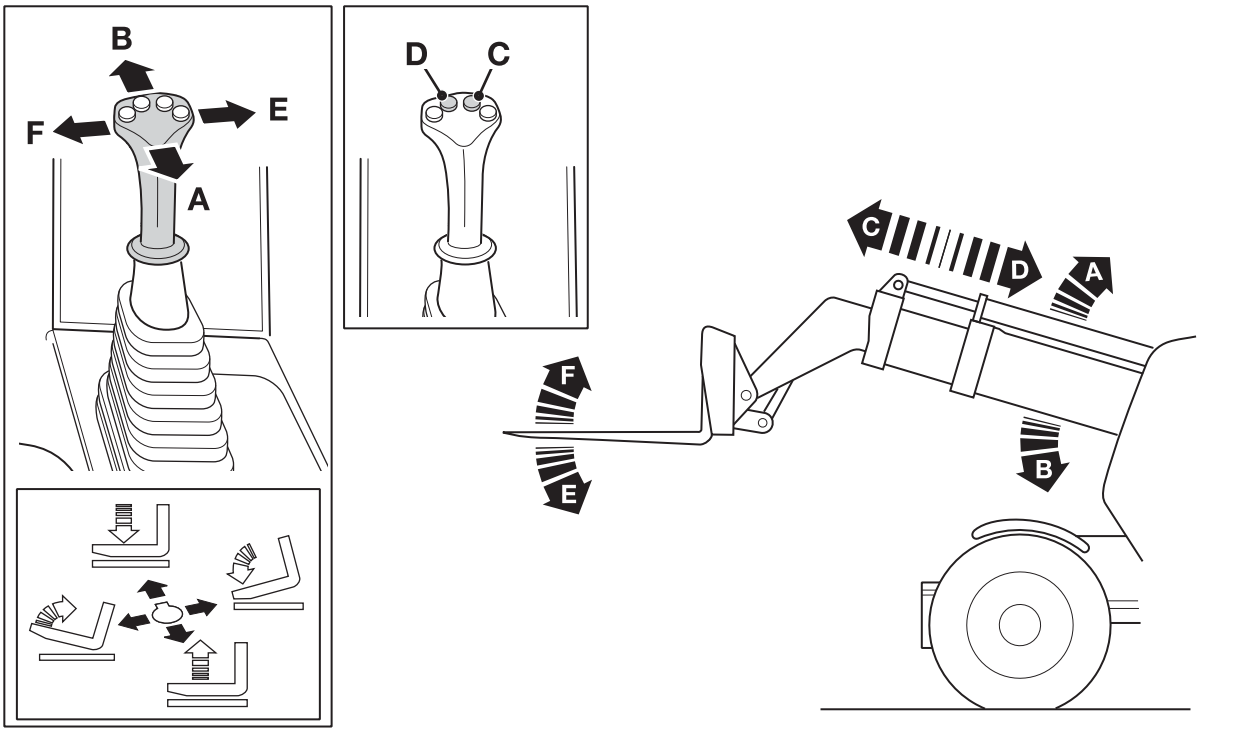


Fig 73.

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

Important: *3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. Fully retract the boom at least once every day. Refer to* ***Boom, Re-phasing of 3-Stage Booms****.*

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Single Lever Control (Thumb Wheel Type)

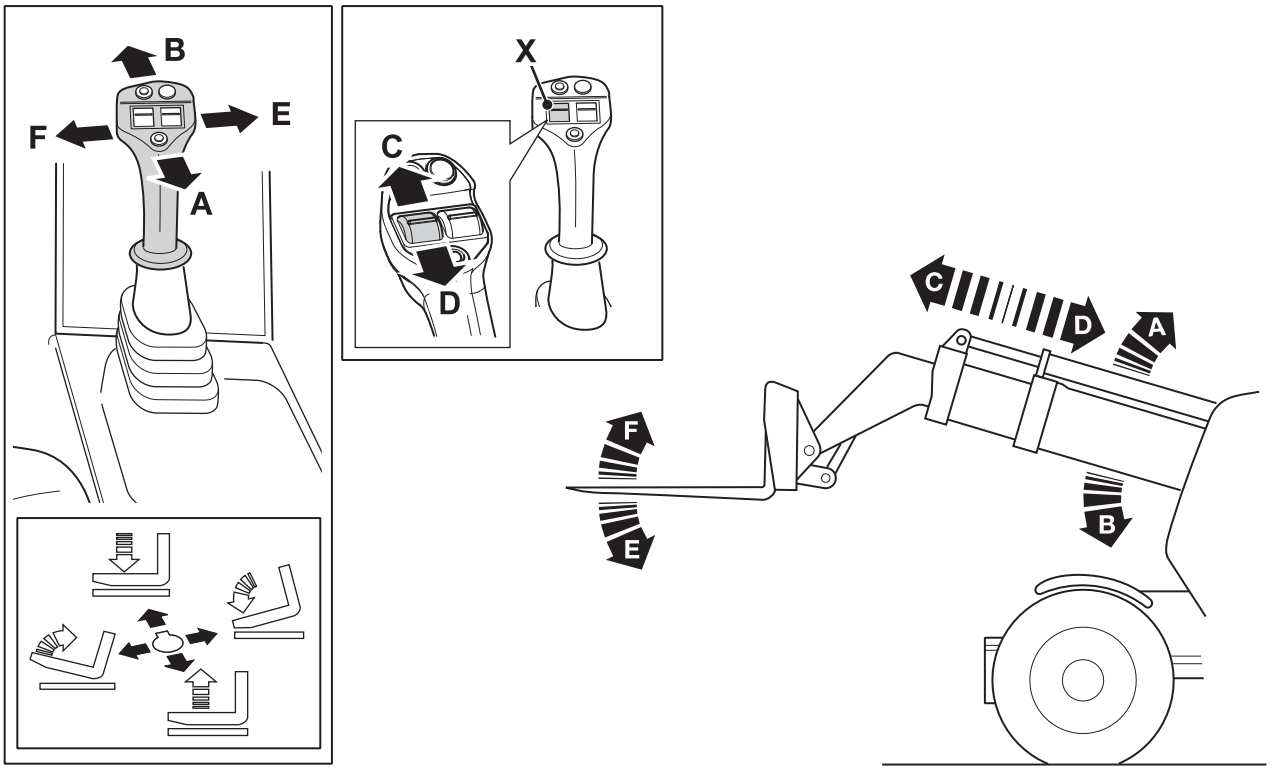


Fig 74.

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

Important: *3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. Fully retract the boom at least once every day. Refer to* ***Boom, Re-phasing of 3-Stage Booms****.*

The boom extend/retract switch **X** is spring-loaded to the central hold positions. The speed of movement of the boom depends on how far you move the switch - the further you move the switch, the faster the boom moves.

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Single Lever Control (Basic Thumb Wheel Type)(Construction machines only)

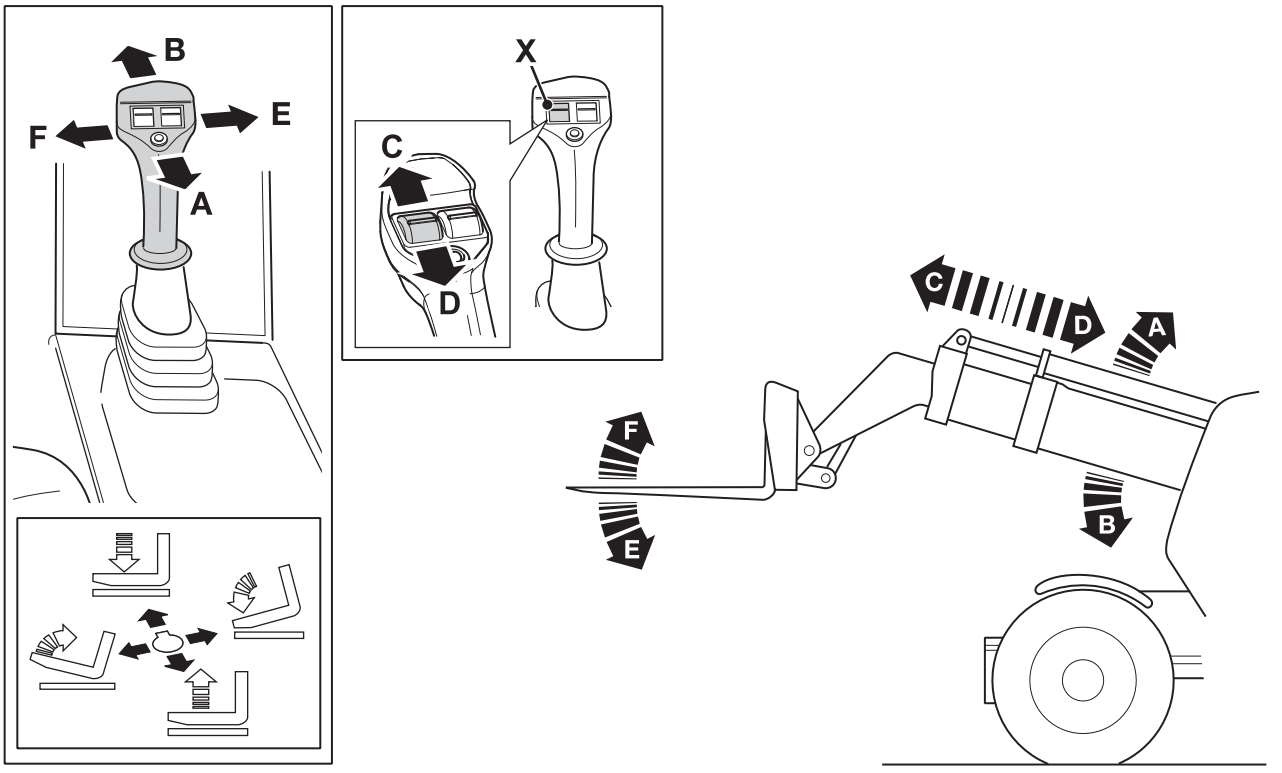


Fig 75.

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

Important: *3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. Fully retract the boom at least once every day. Refer to* ***Boom, Re-phasing of 3-Stage Booms****.*

The boom extend/retract switch **X** is spring-loaded to the central hold positions. The speed of movement of the boom depends on how far you move the switch - the further you move the switch, the faster the boom moves.

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Servo Control

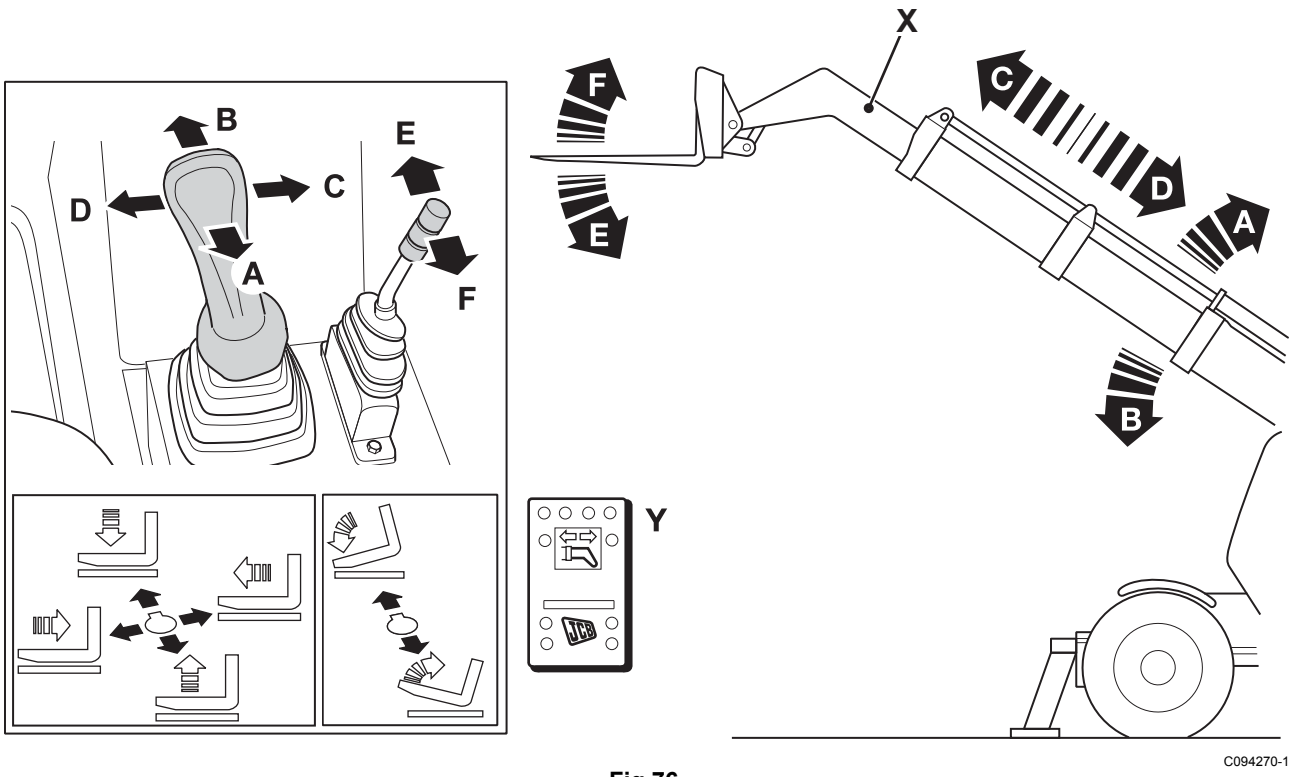


Fig 76.

- **A** Boom raise
- **B** Boom lower
- **C** Boom extend
- **D** Boom retract
- **E** Carriage tilt forward
- **F** Carriage tilt back

⚠ CAUTION

Do not extend the inner boom section until all intermediate sections are fully extended. This will reduce the load on the boom. Always extend the intermediate boom sections first for routine operation of the machine.

0052

Note: *540-170 machines use a system of interlocks to prevent the operation of the machine beyond default limits.*
⇒ Interlock System (🗋 157)

To operate the inner boom **X**:

1. Lower the stabilisers to the ground.
2. Press switch **Y** to select the inner boom section.

   The extend/retract (**C** and **D**) functions change from the main boom sections to the inner boom section.

   To change back to main boom extend/retract, first fully retract the inner boom and then press switch **Y** to the OFF position.

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Auxiliary Controls

Note: *To fit an attachment, see* ***Optional Attachments****.*

⚠ WARNING

Before operating the Auxiliary control system make sure that you are aware of all WARNINGS and CAUTIONS that apply to the attachment you are using. Also make sure you have fitted the attachment correctly. (See OPTIONAL ATTACHMENT section).

5-2-2-6

Dual Lever Control

531-70, 535-95, 536-70 and 541-70 Machines

The machine is fitted with one auxiliary circuit (AUX 1). A second auxiliary circuit (AUX 2) is available as an option on some machines. An optional trailer pickup hitch is also available. In all cases there is only one auxiliary switch; selection of AUX 2 and the trailer circuit is made by means of switches.

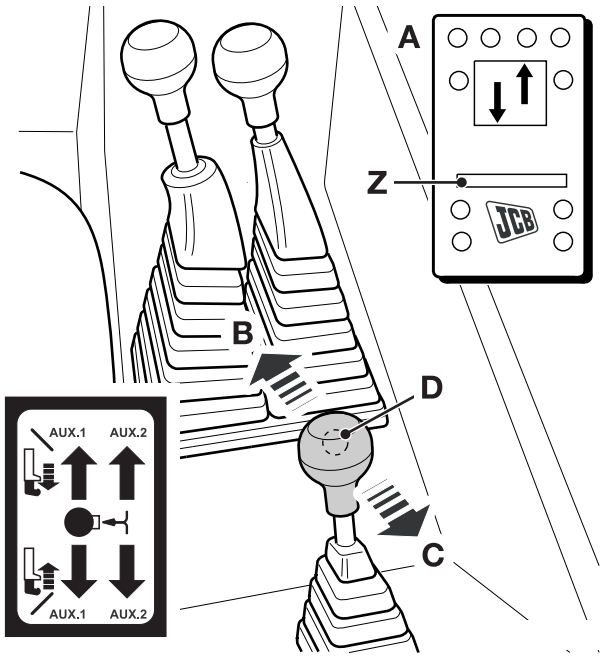


Fig 77.

AUX 1 - Ensure the Hitch/Auxiliary selector switch **A**, is set to **ON**, the switch light **Z** is illuminated. Move control lever in direction **B** or **C** depending on the attachment fitted and the function required.

AUX 2 - Ensure the Hitch/Auxiliary selector switch **A**, is set to **ON**, the switch light **Z** is illuminated. Press and hold button **D**. Move the control lever in direction **B** or **C** depending on the attachment fitted and the function required.

Hitch Operation: ⇨ ***Tow Hitch Options (🗋 160)***.

Other Machines

The machine is fitted with one auxiliary circuit (AUX 1) only.

AUX 1 - Move control lever in direction **E** or **F** depending on the attachment fitted and the function required.

Hitch Operation: ⇨ ***Tow Hitch Options (🗋 160)***.

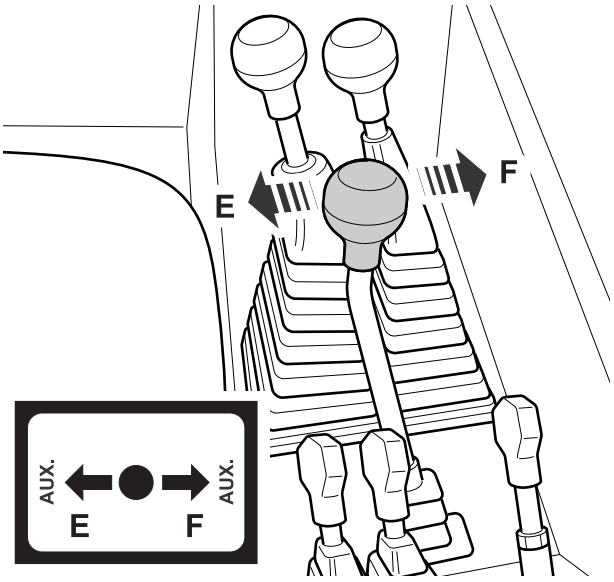


Fig 78.

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Single Lever Control (Push Button Type)

The machine is fitted with one auxiliary circuit (AUX 1). A second circuit (AUX 2) is available as an option. An optional trailer pickup hitch is also available.

AUX 1 - Ensure the Hitch/Auxiliary selector switch **Y**, if fitted, is set to position **2**. The switch light **Z** will illuminate. Press **B** or **C** depending on the attachment fitted and the function required.

AUX 2 - Ensure the Hitch/Auxiliary selector switch **Y**, if fitted, is set to position **2**. The switch light **Z** will illuminate. Press **D** or **E** depending on the attachment fitted and the function required.

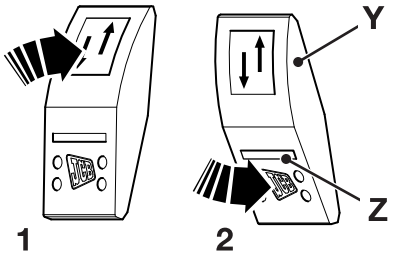


Fig 79.

Hitch Operation: ⇨ *Tow Hitch Options (🗋 160)*.

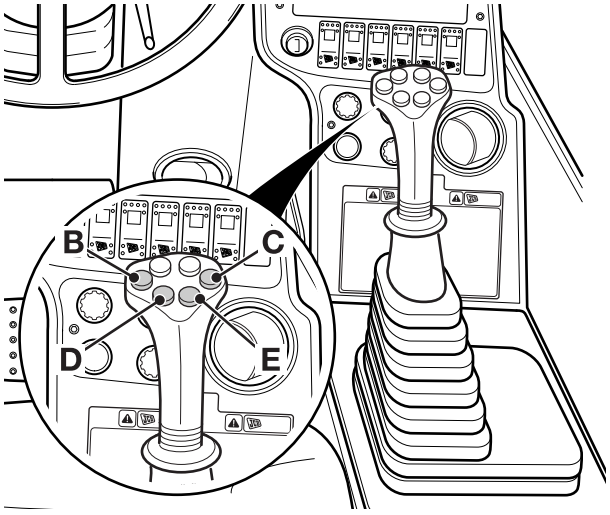


Fig 80.

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Single Lever Control (Thumb Wheel Type and Basic Thumb Wheel Type)

The machine is fitted with one auxiliary circuit (AUX I). A second circuit (AUX II) is available as an option. An optional trailer pickup hitch is also available.

Note: *AUX I can be set to provide a constant flow to the attachment connected.*

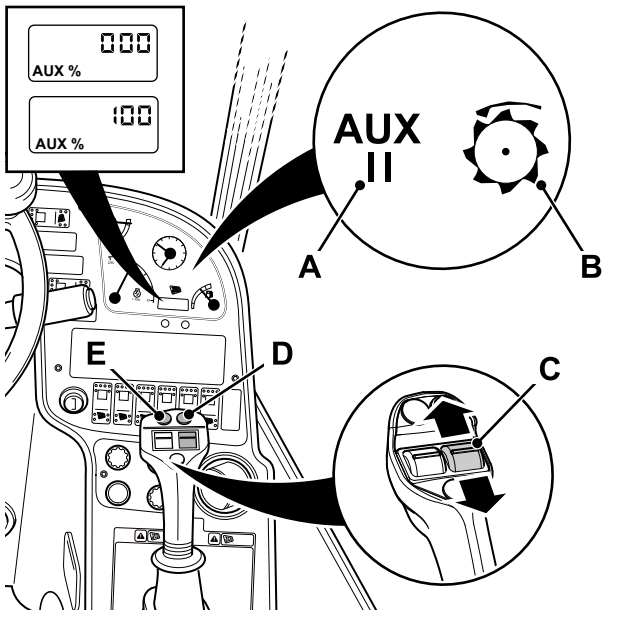
To enable the operator to identify which Auxiliary mode is selected, the control lever is fitted with two identification LEDs **A** and **B**.

Important: *Before operating the controls identify which auxiliary mode is selected.*

A OFF/**B** OFF	AUX I selected
A ON/**B** OFF	AUX II selected
A OFF/**B** ON	Constant Flow selected

Note: *As a bulb and system check, each of the LEDs illuminate briefly when the starter switch is set to position **I**.*

The auxiliary control switch **C** is a proportional roller type. It is spring loaded to it's mid-position. Speed of operation depends on how far the switch is moved.



795636-2-C1

Fig 81.

AUX 1

1 Ensure the Hitch/Auxiliary selector switch **Y**, if fitted, is set to position **2**. The switch light **Z** will illuminate.

Note: *LED's **A** and **B** should be extinguished.*

2 Roll thumb wheel **C** forwards or backwards depending on the attachment fitted and the function required.

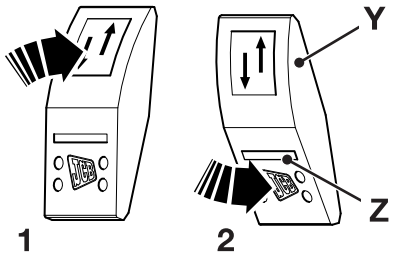


Fig 82.

AUX 1 (Constant Flow Mode)

1 Ensure the Hitch/Auxiliary selector switch **Y**, if fitted, is set to position **2**. The switch light **Z** will illuminate.

2 To enable Constant Flow mode:

a Set the Constant Flow selector switch **W**, to position **2**.

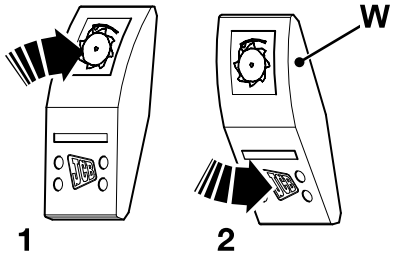


Fig 83.

b Using thumb wheel **C**, select the direction and speed of flow required. Hold thumb wheel **C** in this position and press button **D** to engage. LED **B** will

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illuminate to indicate that Constant Flow is selected.

The digital display on the instrument panel will display the% of flow available - 0% being minimum and 100% being maximum. When in constant flow mode, pressing button D or moving thumbwheel C will activate the display.

Subsequent operations of button **D**, will active and then deactivate Constant Flow mode. The speed and direction of flow selected previously is retained throughout.

Note: *A maximum constant flow of 65% should be selected when using motorised attachments for a prolonged period (over 30 minutes)*

Note: *If the engine is switched OFF, the constant flow setting is reset.*

3 To change the Constant Flow setting:

a Roll thumb wheel **C** past the Constant Flow setting position selected in step 2. LED **B** will extinguish to indicate that Constant Flow is disabled.

b Hold thumb wheel **C** in the new setting position and press button **D** to engage. LED **B** will illuminate to indicate that Constant Flow is selected.

4 To exit Constant Flow mode:

a Press button **D**. LED **B** will extinguish.

Note: *If thumb wheel **C** is operated while the machine is in this mode, the speed and direction of flow is manually controlled.* ⇨ ***AUX 1 (🗋 95)***.

b Set the Constant Flow selector switch **W** to position **1**. The amber LED **B** should be extinguished.

AUX 2

1 Ensure the Hitch/Auxiliary selector switch **Y**, if fitted, is set to position **2**. The switch light **Z** will illuminate.

2 To enter AUX 2 mode, press button **E**. LED **A** should illuminate.

3 Roll thumb wheel **C** forwards or backwards depending on the attachment fitted and the function required.

4 To exit AUX 2, press button **E**. LED **A** should be extinguished.

Hitch Operation

Hitch operation: ⇨ ***Tow Hitch Options (🗋 160)***.

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Servo Control

The machine is fitted with one auxiliary circuit (AUX 1). This circuit has standard couplings **D** at the end of the boom and (if fitted) a set of high flow couplings **E** on the outer boom. High flow will only operate if the standard couplings are not connected.

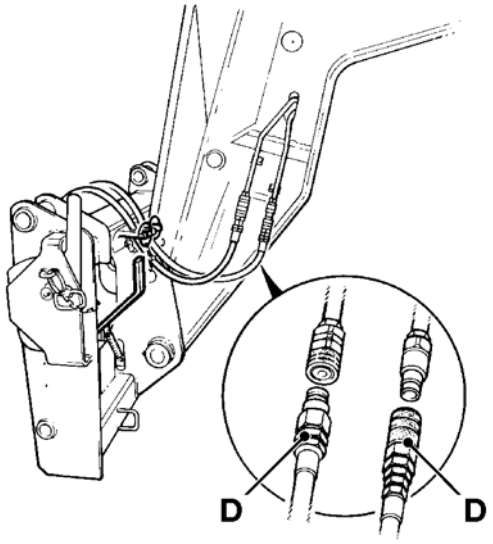


Fig 84. Standard Couplings

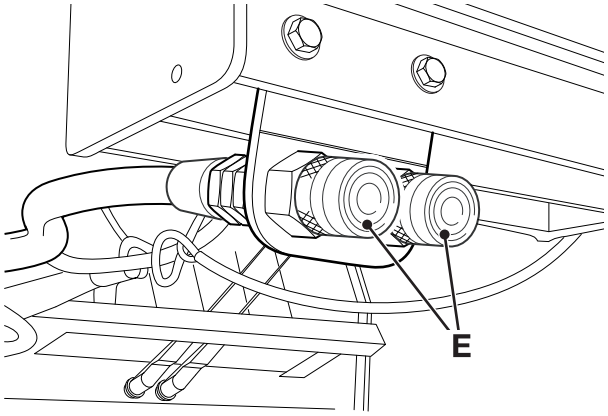


Fig 85. High Flow Couplings

⚠ CAUTION

Do not extend the boom when an attachment is connected to the high flow auxiliary connectors (if fitted). Severe damage to the hoses will result.

0054_2

Standard and high flow attachments use the same controls.

AUX 1 - Move control lever in direction **B** or **C** depending on the attachment fitted and the function required.

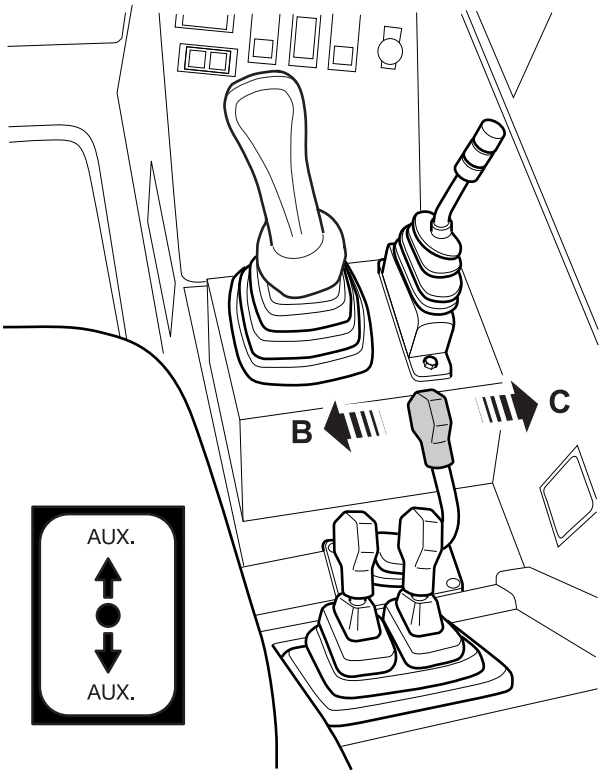


Fig 86.

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Chassis Levelling (Sway) Option

⚠ WARNING

Never operate the chassis levelling (sway) control when the boom is above the horizontal position. Never operate the boom if the machine is not level.

Use the chassis levelling (sway) control to level the machine before operating the boom. Reposition the machine if a level position cannot be achieved.

Never operate chassis levelling (sway) when the machine is moving.

The machine could tip over if you do not obey these safety rules.

5-2-2-5_3

⚠ WARNING

Controls

You or others can be killed or seriously injured if you operate the control levers from outside the machine. Operate the control levers only when you are correctly seated.

0179_2

The chassis levelling (sway) control switch allows the machine to be levelled from side to side before loading and unloading. The switch must also be used to level the machine from side to side before travelling.

The ram will stay in any position until you move it with the switch.

Use inclinometer **A** to check that the machine is level before operating the boom. The machine is level when the inclinometer shows zero degrees (0°).

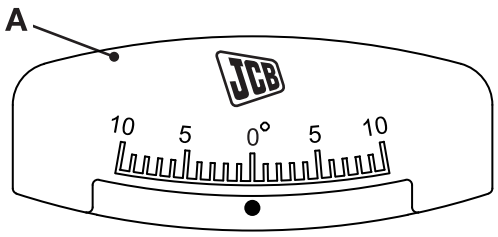


Fig 87.

Use indicator **B** to check that the body of the machine is square to the axles before driving the machine. The machine is square to the axles when rod **C** is level with the top end of tube **D**. When the rod is above the tube, the machine is swayed to the right. When the rod is down inside the tube, the machine is swayed to the left.

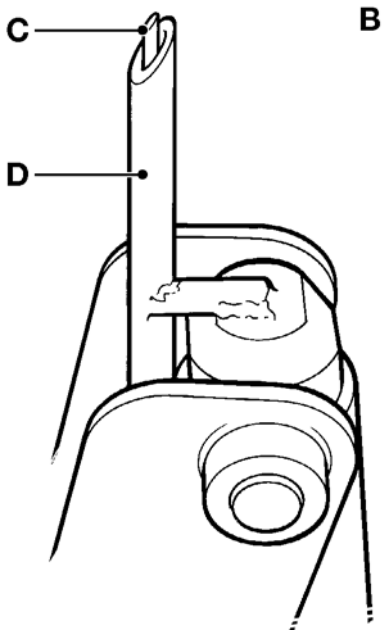


Fig 88.

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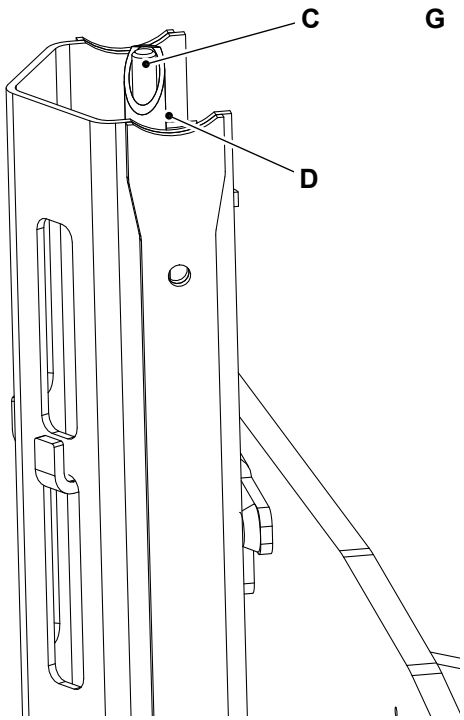


Fig 89.

Note: *540-200 is fitted with an alternate indicator **G**, located in front of the cab. The machine is square to the axles when rod **C** is level with the top of tube **D**. When the rod is above the tube, the machine is swayed to the left. When the rod is down inside the tube, the machine is swayed to the right.*

Sway Left/Sway Right

The switch movements and chassis levelling movements are indicated on a decal:

E Sway Left

F Sway Right

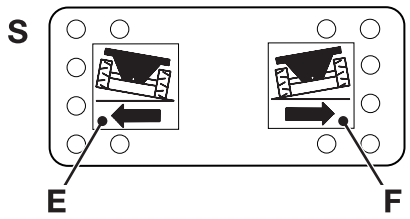


Fig 90.

Note: *Some machines have a system of interlocks to prevent the operation of the machine beyond default limits. In some conditions, this system isolates the sway controls.* ***⇨ Interlock System (157)***.

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Stabiliser Control Option

⚠ WARNING

Do not allow debris to accumulate in the cavity between the ram and the stabiliser leg. Remove and clean away all debris that may have built-up.

0001

The use of stabilisers increases the stability of the machine when lifting.

The lateral position of the machine is indicated by an inclinometer **A** fitted in the cab. Use inclinometer to check that the machine is level before operating the boom. The machine is level when the inclinometer shows zero degrees (0°).

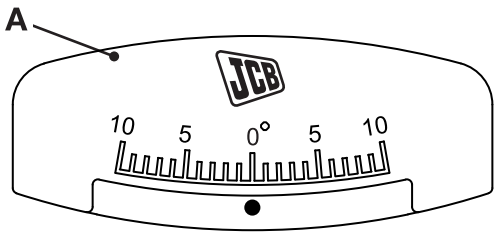


Fig 91.

Reposition the machine if a level position cannot be achieved.

Ensure the stabiliser legs are in the down position and the weight of the machine is supported. ⇨ ***Stabiliser indicator lights (101)***.

Do not extend the boom more than necessary.

Isolate the stabiliser control levers before operating the machine.

Lower and Raise Stabilisers

Switch **F** isolates the stabiliser control levers. ⇨ ***Console Switches (58)***

Before travelling on the public highway, fully raise both stabiliser legs and isolate control levers **C**.

When working with the stabilisers lowered isolate the control levers **C** before operating the boom controls.

D Lower

E Raise

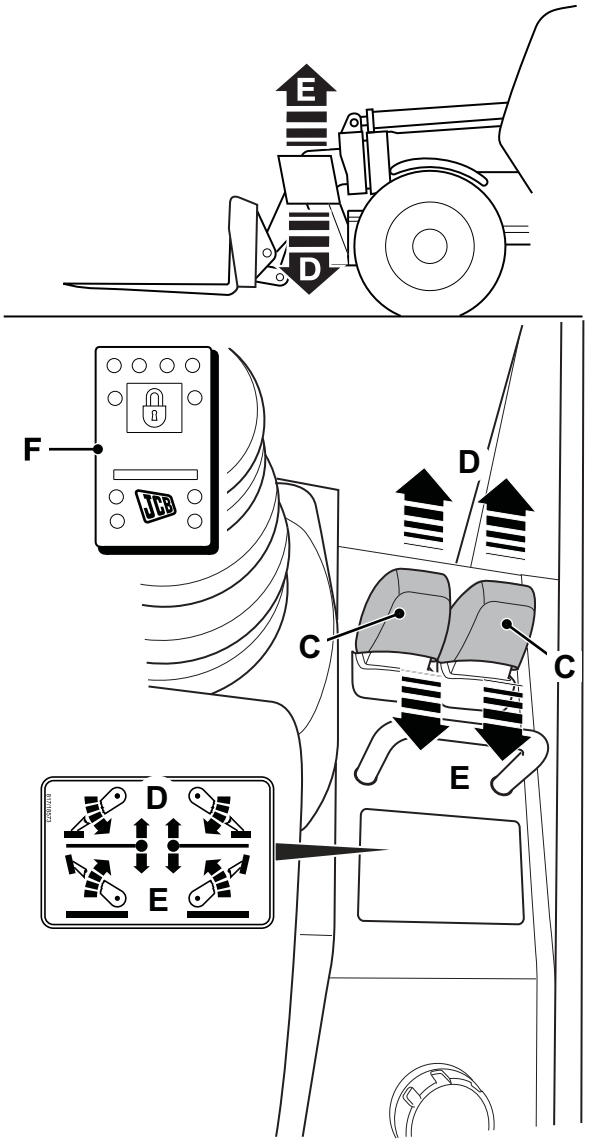


Fig 92.

Note: *Some machines have a system of interlocks to prevent the operation of the machine beyond default limits. In some conditions, this system isolates the stabiliser controls.* ⇨ ***Interlock System (157)***.

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Stabiliser indicator lights

The machines below can be fitted with optional stabiliser indicator lights **B**.

- 540-170
- 533-105
- 535-125 HiViz
- 535-140 HiViz
- 540-140
- 540-140 HiViz
- 540-200

The lights will illuminate when both stabiliser legs are in the down position and the weight of the machine is supported.

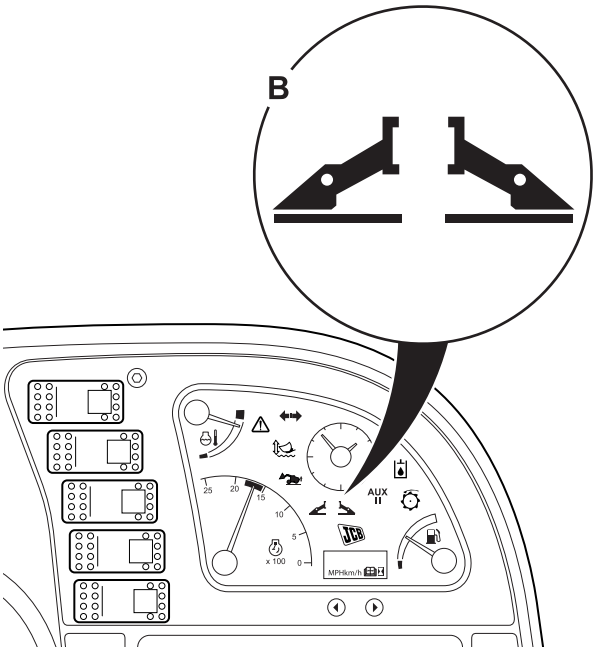


Fig 93.

If fitted, ensure both indicator lights illuminate when the stabiliser legs are in the down position. If the lights do not illuminate do not use the machine until the fault is investigated and corrected.

The lights will flash if the leg is in the down position but the machine weight is not fully supported. Either lower the load on the boom or reposition the machine on firm ground (excluding 540-170 machines).

Note: *The llumination of the leg lights indicates to the operator that the full lift envolope is available.* ⇨ ***Interlock System (157)***.

Note: *If the load on the forks is reduced during operation, which in turn extinguishes the leg lights, both lift and extend will be isolated as the machine's envope has been reduced.* ⇨ ***Interlock System (157)***. *To minimise the occurance of this, it is recomended that when possible that the stabiliser legs are full deployed.*

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Safety Equipment

Control Locks

The requirement for control lever lock/isolation varies according to local legislation. You must comply with local legislation at all times. The locks/switches are designed to lock or isolate the control(s) in the neutral position.

Control levers and switches may vary on machines. The machine may be fitted with any of the following control layouts.

– Dual lever control with loading and placing pattern options and manual auxiliary control levers.
– Single lever control.
– Servo control.

Dual Lever Control

All Lever Lock

Lock all the controls before travelling on public roads. To lock the controls, ensure the levers are in the neutral position, then press down pin **A** as far as it will go. Before starting the engine make sure the controls are locked. To release the lock raise the pin fully.

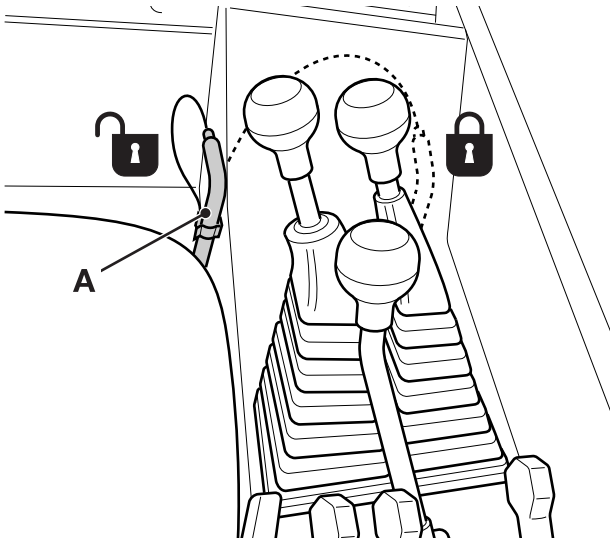


Fig 94.

Tilt Lever Lock

This lock must be fitted when using a platform. To lock the controls ensure the lever tilt lever is in the neutral position, then press down pin **A** as far as it will go. Before starting the engine make sure the controls are locked. To release the lock raise the pin fully.

Auxiliary Lever Lock

To lock the controls, ensure the auxiliary lever is in the neutral position and move the mechanical lock **B** to the lock position. Before starting the engine make sure the lever is locked. Move the lock away from the lever to release.

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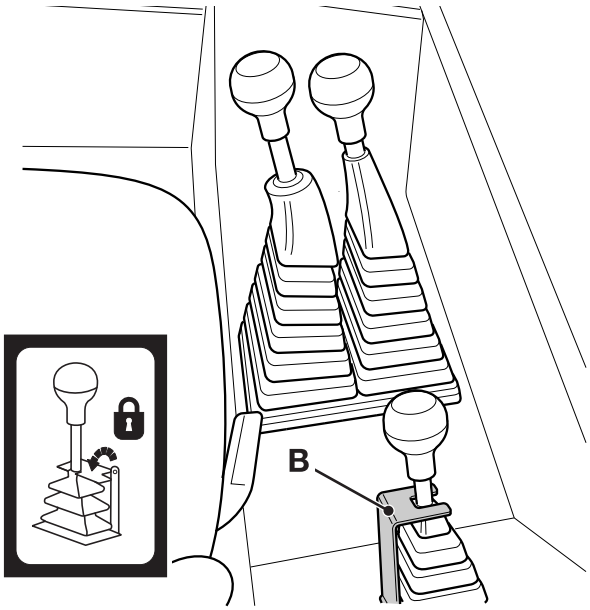


Fig 95. 531-70, 535-95, 536-70, 541-70

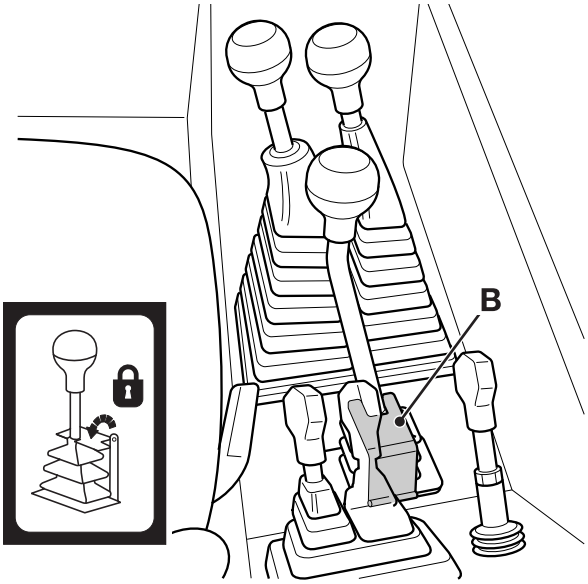


Fig 96. Other machines

Single Lever Control (Push Button Type)

All Lever Lock

Lock all the controls before travelling on public roads. To lock the controls, ensure the lever **F** is in the neutral position, then press down pin **G** as far as it will go. Before starting the engine make sure the controls are locked. To release the lock raise the pin fully.

Isolate the joystick button functions before travelling on public roads. To isolate the buttons, operate the Joystick Isolation Switch **H**. ⇨ *Console Switches (58)*.

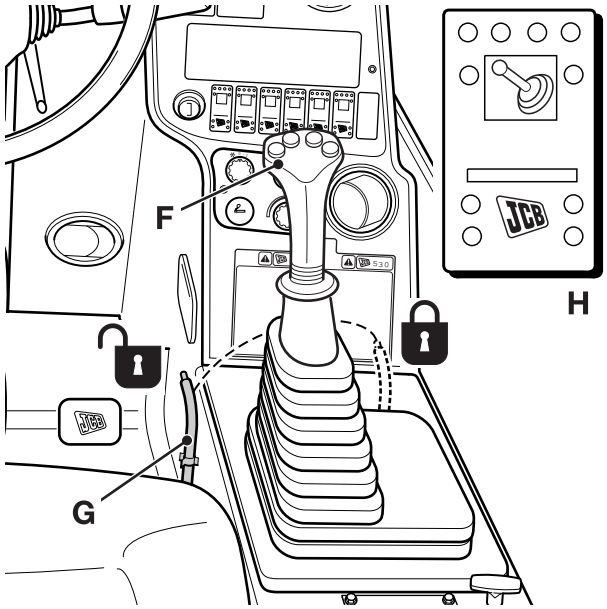


Fig 97.

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Single Lever Control (Thumb Wheel Type)

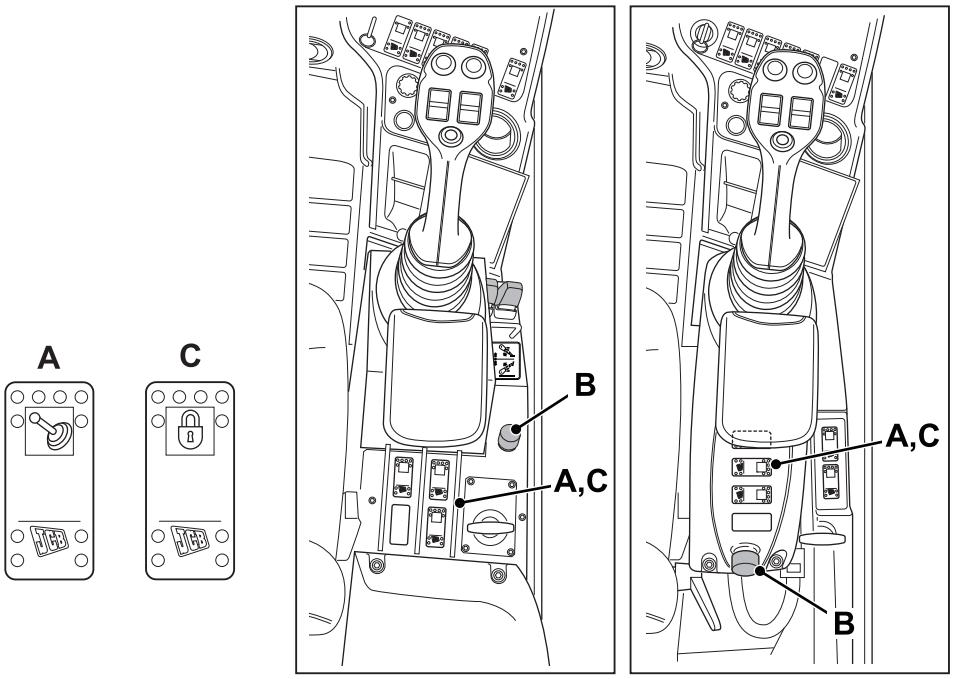


Fig 98.

All Lever Lock

Isolate the joystick functions before travelling on public roads.

To isolate the joystick functions, operate the Joystick Isolation switch **A**. ⇨ *Console Switches (58)*.

Important: *The Joystick Isolation switch isolates the joystick's electrical functions. In the unlikely event that operating the switch fails to isolate the controls (i.e. due to a sticking valve spool), press the Machine Hydraulic Stop switch **B**. Do not release the switch until it is safe to do so.*

Important: *Agri Xtra machines: The joystick functions do not automatically enable after machine start up. To enable the joystick functions set the ignition to ON then operate switch **A**.*

Tilt Lock

The tilt function must be isolated when using a platform.

To isolate the tilt function, operate the control lock switch **C**. ⇨ *Console Switches (58)*.

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Servo Control

All Lever Lock

Lock all the controls before travelling on public roads. To lock the controls:

1 Ensure the levers are in the neutral position.

2 Turn switch **A** to position **B**.

Before starting the engine make sure the controls are locked.

Turn the switch to the central position **C** to release the lock.

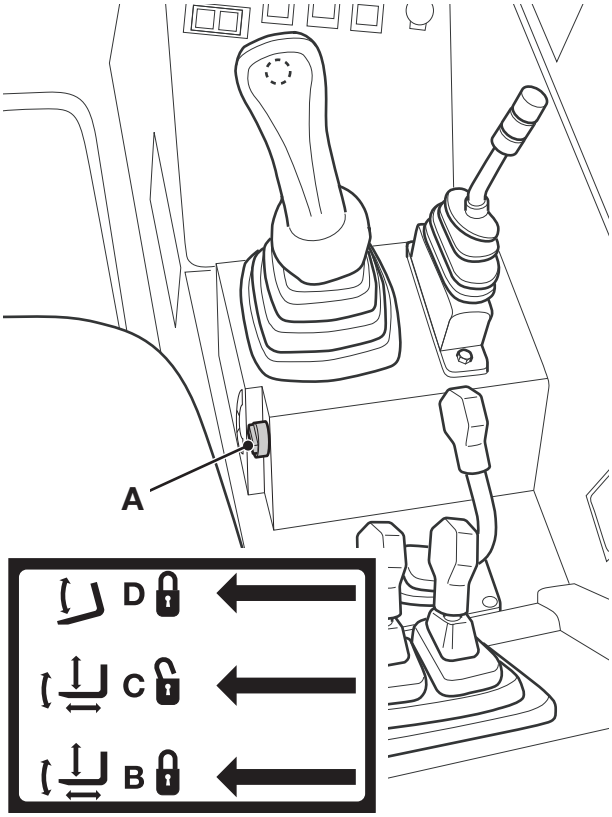


Fig 99.

Tilt Lever Lock

This lock must be fitted when using a platform. To lock the controls:

1 Ensure the levers are in the neutral position.

2 Turn switch **A** to position **D**.

Turn the switch to the central position **C** to release the lock.

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Load Charts

The Safe Working Load (SWL) of the machine depends on how far the boom is extended and the angle it is raised to.

Before operating the machine it is important to identify which of the following items are also fitted:

⇒ *Longitudinal Load Moment Indicator (LLMI) (🗋 109)*
⇒ *Boom Indicators (🗋 108)*

The following explanation is for the Load Charts.

Introduction to Load Charts

P5-2015_3

⚠ CAUTION

The Load Chart shown is only an example. Do not use it to find the loading limits on your machine. Before lifting or placing loads, refer to the Load Charts in the cab of your machine.

5-2-4-2

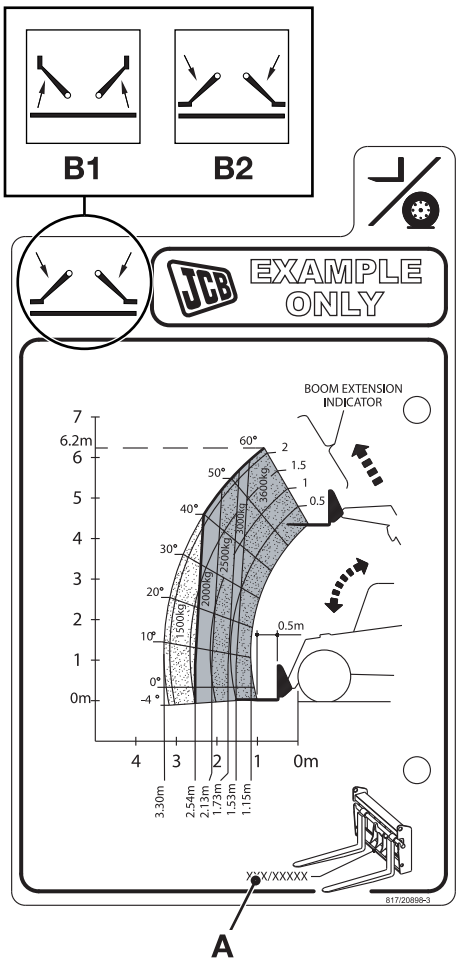
The SWL at different boom positions is shown on the load charts in the cab. ⇒ *Fig 100. (🗋 106)*.

The load charts show how far you can raise and extend a load without exceeding the safe working load. Each machine model has its own load chart for a standard fork carriage, and alternative charts for use when stabilisers or chassis levelling (sway) options are used. There may be other load charts for use when a different carriage or attachment is fitted on the boom.

The limits shown on the load chart only apply to a machine installed with JCB approved tyres. To obtain the limits shown the tyres must be in good condition and inflated to the correct pressure. If you are in doubt, speak to your dealer.

Check the relevant load chart is available for any alternative carriage or attachment. Where appropriate, the load chart shows the part number **A** of the carriage or attachment it refers to. If you are unsure of the correct load chart to use, contact your JCB distributor for advice.

Renew any damaged or missing charts.



T025040-4

Fig 100. Example Only

A Part number of attachment
B1 Stabiliser UP
B2 Stabiliser DOWN

Using the Load Charts

P5-2016_3

⚠ CAUTION

The limits shown on the Load Charts are for a stationary level machine. Do not raise or extend the boom while the machine is moving. Retract the boom fully and lower it as far as possible before you travel with a load.

5-2-4-3_2

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1 Check what boom attachment is fitted to your machine, then refer to the correct Load Chart in the cab.

2 You must know the weight of a load before picking or placing it. Check that the loads Centre of Gravity **X** will not be more than 500 mm (20 in) in front of the fork uprights.

Note: *The load's centre of gravity* ***Y*** *may not be in the middle of the load. You will have to find out where it is.*

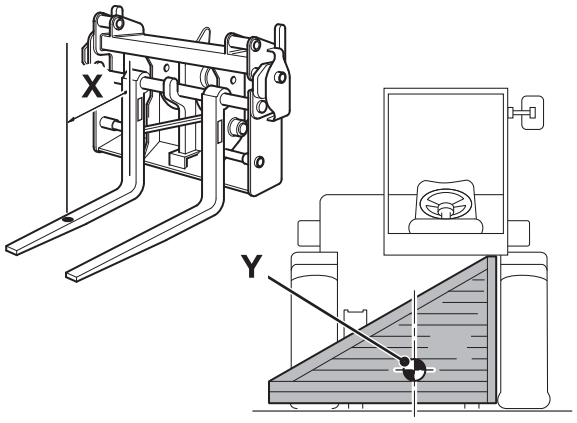


Fig 101.

3 When you know the weight of the load, look on the Load Chart and find the coloured segment with the next highest weight. ⇨ *Fig 102. (🗋 107)*.

For example, on the example Load Chart shown, if your load weight is 1800 kg, find the 2000 kg segment. This is the Maximum Load Segment for your load.

The left-hand edge **B** and the upper edge **C** of this segment show the machine stability limits for your load. You must not angle or extend the boom beyond these limits.

4 After inserting the forks beneath the load, and before lifting the load, check the readings on the boom angle and extension indicators. Find the same readings on the Load Chart.

You will see on the chart that lines run from the boom angle and extension scales, through the coloured area of the chart. Find where the lines for your readings cross. If they cross inside your Maximum Load Segment or to the right of it (see Step 3) the load is within safe limits.

If the lines cross above or on the left of the segment, do not try to pick up the load. Withdraw the forks, retract the boom and try again. If, even with the boom fully retracted, the boom angle and extension readings still cross outside your Maximum Load Segment do not try to lift the load.

5 When the load is on the forks, retract the boom before raising or lowering it. This will reduce the risk of getting the machine unstable. While moving the boom, watch the boom angle and extension indicators. Keep inside the limits for your load.

Note that when the load is high up (say on a scaffolding) you will have to get it clear before fully retracting the boom.

6 Before placing a load, use the Load Chart to find how close you should get the machine to the unload point. You must be able to place the load without crossing the left-hand or upper boundaries of your Maximum Load Segment.

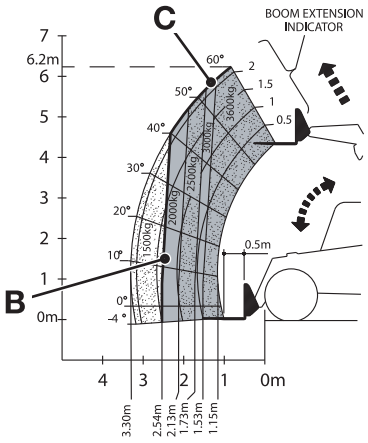


Fig 102. Example Only

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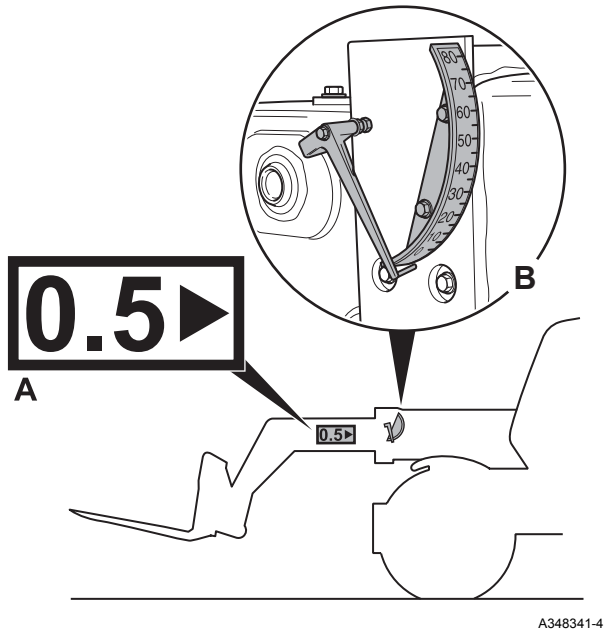
Boom Indicators

P5-2009_3

The machine may be fitted with additional boom indicators **A** and **B**.

The SWL at different boom positions is shown on the load charts in the cab. Boom angle and extension indicators are installed on the boom itself. Boom extension is indicated by numbered labels **A**. The numbers represent boom extension in metres. Boom angle is indicated by an indicator **B**. It has a scale marked in degrees.

Always refer to the charts in the cab before lifting or placing a load. See ***Load Charts***.



A348341-4

Fig 103.

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Longitudinal Load Moment Indicator (LLMI)

General Information

P5-2078

The longitudinal load moment (LLM) is a product of the load on the boom and the distance the load is moved forward from the centre of gravity of the machine. As the load is moved forward so the load moment increases to a value where the machine will tip forwards.

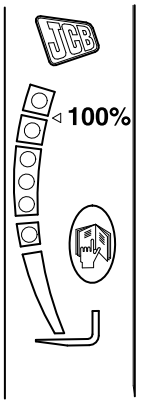
The Longitudinal Load Moment Indicator (LLMI) warns the operator when the machine is nearing its maximum forward longitudinal load moment (when the load moment could cause the machine to tip forward).

Important: *The system does not warn the operator when the machine is at risk of tipping or overturning sideways or rearwards. The system is not intended to warn the operator of tipping or overturning when the machine is travelling, operating on unsuitable ground or subjected to sudden overloading.*

The system is an enhancement to the devices that JCB currently install as standard, for example loadcharts and boom extension markers. The system must not to be relied upon as the primary source of protection for the machine. Duty of care is still with the operator/site agent to:

- know the mass and load centre of loads being handled.
- know boom angle and extension that will be required to place the load (this can be checked by doing a dry run first without the load).
- while moving the load, obey lift charts and boom extension markers.

The system is designed to help you to work more safely - It is not a substitute for skill and common sense!



C093820-C10

Fig 104. LLMI Unit

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LLMI - Operation

P5-2079

⚠ WARNING

Look at the indicator lights frequently while lifting or handling loads. As more lights show, take extra care with control lever movements. Do not jerk the levers or make sudden changes of direction.

5-2-4-4

⚠ WARNING

The Longitudinal Load Moment Indicator (LLMI) shows forward machine stability only. Do not use it as a guide to the weight being lifted. Refer to the load charts in the cab. The maximum working load indicated by the load moment indicator does not correspond to the SWL specified on the load charts in the cab.

5-2-4-18

⚠ WARNING

The readout display will be affected by extreme steer lock and extreme axle pivot angles. Before lifting a load, always ensure that the steering is not on full lock and that the rear axle is not fully pivoted.

5-2-4-13

Important: *Test the LLMI unit daily. Refer to* ***LLMI - Testing****.*

The system is permanently ON when the ignition is ON. Green LED **D** is lit to confirm the unit is ON.

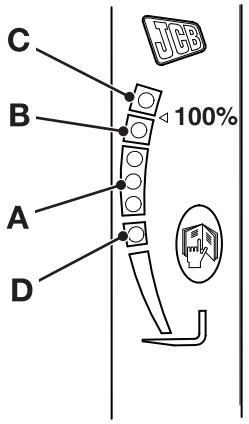
A sensor measures the load exerted on the rear axle and sends a signal to the indicator unit. The indicator unit converts the signal into a display in the form of three green LEDs **A**, one amber LED **B** and one red LED **C**. The LEDs will illuminate progressively as the load increases.

The amber LED **B** will flash as the load nears the maximum working limit. If this happens, move the load into a stable position by raising or retracting the boom.

If the load exceeds the maximum working limit, the red LED **C** will illuminate and an audible warning will activate.

The display brightness and audible warning levels can be adjusted. Refer to ***LLMI - Setting the Volume and Brightness***.

If a system fault is detected, a combination of LEDs will indicate a fault code. Refer to ***LLMI - Diagnostic Fault Codes***.



C093820-C7

Fig 105.

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LLMI - Testing

P5-2080

⚠ WARNING

If the unit is faulty, contact your JCB Distributor. Do not try to repair it yourself.

5-2-4-19

Test the LLMI unit daily.

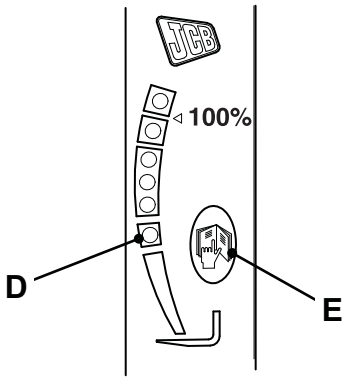
1 Park the machine (unloaded) on level ground with the engine running. Apply the park brake and place the forward/reverse lever in the neutral position.

2 The green LED **D** at the bottom of the display illuminates to show that the indicator is receiving power.

3 Press the display button **E** and release.

4 All LEDs on the indicator flash and the audible alarm sounds if the unit is functioning correctly.

Do not use the machine if the unit is faulty. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB distributor.



C093810-C1

Fig 106.

LLMI - Setting the Volume and Brightness

P5-2081

The volume of the audible alarm, and the brightness of the display LEDs can be set by the operator using display button **E**. This allows the volume and brightness to be reduced for night time use. The possible options are:

- Full volume and full brightness (default setting)
- Reduced volume and full brightness
- Full volume and reduced brightness
- Reduced volume and reduced brightness

1 Park the machine (unloaded) on level ground with the engine running. Apply the park brake and place the forward/reverse lever in the neutral position.

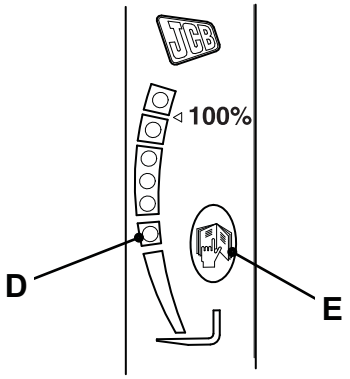
2 The green light **D** at the bottom of the display will illuminate to show that the indicator is receiving power.

3 Press and hold the display button **E**.

The display will cycle through the volume and brightness options, pausing for approximately three seconds to demonstrate each option.

4 Release the button during the required demonstration to select the option.

Note: *The system will reset to the default setting when the starter key is switched to the off position.*



C093810-C1

Fig 107.

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LLMI - Diagnostic Fault Codes

P5-2082

⚠ WARNING

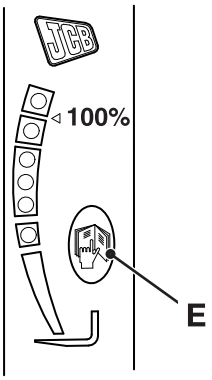
If the unit is faulty, contact your JCB Distributor. Do not try to repair it yourself.

5-2-4-19

If the system detects a fault, the audible alarm will sound and a combination of LEDs illuminate to indicate a fault code for approximately 10 seconds.

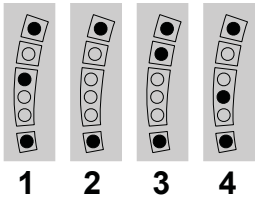
The audible alarm and the fault code display cancel after 10 seconds and all LEDs on the display will flash continuously as long as the fault remains. Press and release display button **E** to show the fault code for a further 10 seconds.

If a fault code is displayed, switch the starter key off and on again. If the fault clears, the display will return to normal. Do not use the machine if the fault does not clear. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB distributor.



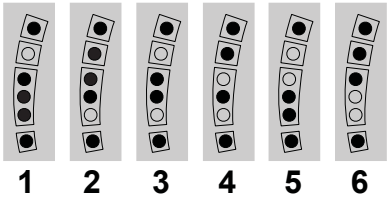
C093810-C2

Fig 108.



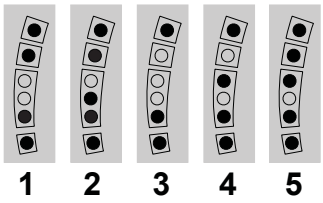
C093940-C1

Fig 109. Calibration Faults



C093940-C2

Fig 110. LLMI Unit Faults



C093940-C3

Fig 111. LLMI External Faults

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Longitudinal Load Moment Control (LLMC) System

Introduction

This section of the manual provides information for the Longitudinal Load Moment Control (LLMC) system which is fitted as standard to European Specification machines excluding 540-170 and is available as an option on Non European Specification machines excluding 540-170.

General Information

The longitudinal load moment (LLM) is a product of the load on the boom and the distance the load is moved forward from the centre of gravity of the machine. As the load is moved forward so the load moment increases to a point where the machine will tip forwards.

The LLMC system slows the operation of all hydraulic services as the machine gets closer to its maximum working limit (ie when the load moment could cause the machine to tip forward) when performing loading and placing operations. Automatic isolation of the hydraulic services inhibits the operator from exceeding the maximum longitudinal load moment.

Important: *The system does not warn, or prevent the machine tipping or overturning sideways or rearwards. The system is not intended to warn, or prevent tipping or overturning when the machine is travelling, operating on unsuitable ground or subjected to sudden overloading.*

The system is an enhancement to the devices that JCB currently install as standard, for example loadcharts and boom extension markers. The system must not to be relied upon as the primary source of protection for the machine. Duty of care is still with the operator/site agent to:

- know the mass and load centre of loads being handled.
- know boom angle and extension that will be required to place the load (this can be checked by doing a dry run first without the load).
- while moving the load, obey lift charts, boom extension markers and LLMI indications.

Neither will the system protect against instability due to the stabiliser legs being lifted nor misuse of the chassis levelling (sway) function (if either of these options are fitted). See ***Stabiliser Control Option*** and/or ***Chassis Levelling (Sway) Option*** in OPERATION section of the machine Operator Manual.

The use of handling attachments for unit loads (for example, bales or bulk bags) can cause a significant increase in the overturning moment through use of the crowd and dump operations. Ensure that use of such attachments does not take the machine beyond its stability limit. Refer to machine Load charts.

⚠ WARNING

Load Control monitors forward machine stability only. Do not use it as a guide to the weight being lifted. Refer to the load charts in the cab. The maximum working load indicated by the Load Control System does not necessarily correspond to the SWL specified on the load charts in the cab.

0184_3

⚠ WARNING

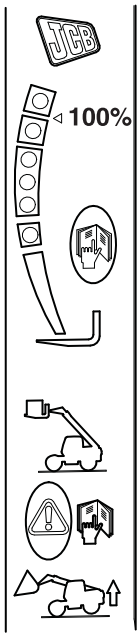
The readout display will be affected by extreme steer lock and extreme axle pivot angles. Before lifting a load, always ensure that the steering is not on full lock and that the rear axle is not fully pivoted.

5-2-4-13

The system is designed to help you to work more safely - It is not a substitute for skill and common sense!

Note: *On 5-stage machines a notable change may occur on the LLMC indicator on transision into or out of some interlock zones, this is expected as the machine changes control states.* ⇨ ***Interlock System (157)***.

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C093820-C9

Fig 112. LLMC, LLMI Combined Unit

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LLMC - Operation

The LLMC system function must be checked at the start of each shift. Refer to ***LLMC - Functional Check***.

The system is permanently ON when the ignition is ON. The system automatically switches between active (green symbol **F** illuminated) and not active (amber symbol **H** illuminated) depending on the machine status. The LLMI system functions as normal. Refer to ***LLMI - Operation***.

Be aware that the LLMC system is not active when the machine is travelling or when the boom is fully retracted.

As the machine gets closer to its stability limit the boom hydraulic services slow down and then stop. Only boom raise and retract services will operate. Move the load into a stable position by raising or retracting the boom. When a load has been recovered to a more stable condition, it will only be possible to use other hydraulic services after the lever has been returned to the neutral position.

If there is a system fault the boom hydraulic services are automatically isolated.

Warm-Up Procedure

For the machine hydraulic system to work efficiently, the machine hydraulic oil temperature should be a minimum of 10°C (50°F). If the air temperature is below freezing, the following warm-up procedure should be carried out.

1 Park the machine (unladen) on level ground with the engine running. Apply the park brake and place the forward/reverse lever in the neutral position.

2 With the engine at approximately 1500 rpm:-

- **a** Raise and lower the boom five times
- **b** Extend and retract the boom five times
- **c** Dump and crowd the carriage five times

3 Then perform the LLMC Functional Check

System Override

If it is not possible to recover the load by raising or retracting the boom, the system can be temporarily overridden.

⚠ WARNING

In override mode the machine is not protected. Only use it to reduce the load moment of the machine. Never exceed the limits set by the load chart, extension markers or angle indicator.

0186

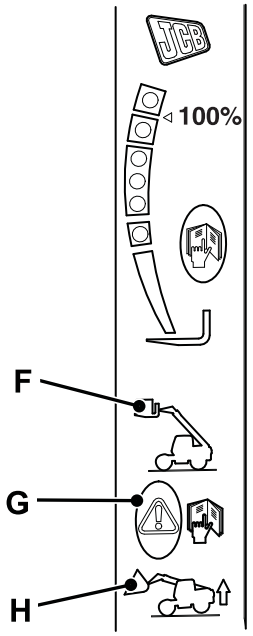
⚠ WARNING

Incorrect operation of the crowd/dump functions (when laden) can cause the machine to become unstable and loss of the load. The LLMC does not prevent such operation and you must operate within the machines limits.

5-2-7-10

1 Press and hold the mode button **G**. When all the LEDs flash the override function is enabled for a maximum of 60 seconds. An audible alarm will sound.

2 Operate the controls to recover the load and then release button **G**. The override function can not be selected again until 5 seconds have elapsed.



C093820-C6

Fig 113.

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LLMC - Functional Check

⚠ WARNING

If the system is faulty, contact your JCB distributor. Do not try to repair it yourself.

0206

Test the LLMC system at the start of each shift.

1 Complete the LLMI unit daily check. Refer to ***LLMI - Testing***.

2 Park the machine (unloaded) on level ground with the engine running. Fully retract and lower the boom. The symbol **H** should illuminate.

3 Complete the test procedure in the table in the sequence shown. ⇨ *Table 8. (116)*.

⚠ WARNING

Do not tamper, modify or try to disable the LLMC as this can damage the operation of both the LLMI and LLMC permanently. A defective LLMI or LLMC may allow the operator to exceed the limits of stability and can cause the machine to overturn, serious injury or death.

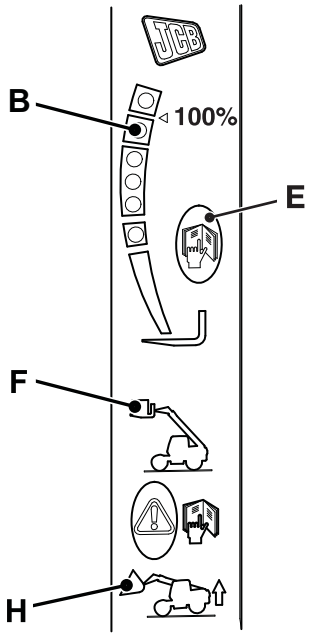
5-2-7-9

Table 8.

Operation		Result
1	Partly raise and extend the boom.	Symbol **H** = OFF, Symbol **F** = ON
2	Drive the machine forwards.	Symbol **F** = OFF, Symbol **H** = ON
3	Stop the machine.	Symbol **F** = ON, Symbol **H** = OFF
4	Press and release button **E**. When the LLMI LEDs flash, operate boom lower.	The boom should not lower.
5	Press and release button **E**. When the LLMI LEDs flash, operate boom extend.	The boom should not extend.
6	Press and release button **E**. When the LLMI LEDs flash, operate boom raise.	The boom should raise.
7	Press and release button **E**. When the LLMI LEDs flash, operate boom retract.	The boom should retract.
8	Select a suitable load (for example a pack of blocks). Make sure the machine is on level ground and apply the park brake. With the stabilisers up, position the boom so that the load is just clear of the ground. Extend the boom slowly and carefully. Watch the LEDs progress up the scale.	Hydraulic operation should slow and then stop when the amber LED **B** flashes.

Note: *When operating in cold ambient temperatures, the machine can fail the Daily Functional Check if the hydraulic oil is insufficiently warm. If this is the case, repeat the warm up procedure prior to repeating the Daily Functional Check.*

Important: *Do not use the machine if the result for one or more of the test procedures is not correct. Stop and park the machine as soon as safety permits. Switch OFF the engine. Contact your JCB distributor.*



C093820-3

Fig 114.

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LC4 Load Control System

Introduction

This section of the manual provides information for the LC4 Load Control Systems (LCS) which is fitted as standard to European Specification 540-170 machines and is available as an option on Non European Specification 540-170 machines.

General Information

The longitudinal load moment (LLM) is a product of the load on the boom and the distance the load is moved forward from the centre of gravity of the machine. As the load is moved forward so the load moment increases to a point where the machine will tip forwards.

The LLMC system stops the operation of the extend, lower, crowd and dump functions as the machine gets closer to its maximum working limit (ie when the load moment could cause the machine to tip forward) when performing loading and placing operations. Automatic isolation of the hydraulic services inhibits the operator from exceeding the maximum longitudinal load moment.

Important: *The system does not warn, or prevent the machine tipping or overturning sideways or rearwards. The system is not intended to warn, or prevent tipping or overturning when the machine is travelling, operating on unsuitable ground or subjected to sudden overloading.*

The system is an enhancement to the devices that JCB currently install as standard, for example loadcharts and boom extension markers. The system must not to be relied upon as the primary source of protection for the machine. Duty of care is still with the operator/site agent to:

- know the mass and load centre of loads being handled.
- know boom angle and extension that will be required to place the load (this can be checked by doing a dry run first without the load).
- while moving the load, obey lift charts, boom extension markers and LLMI indications.

The system has two working modes, Load Control Mode and Ground Work Mode. There is an additional Emergency Override mode. These modes are described in the following pages.

Neither will the system protect against instability due to the stabiliser legs being lifted nor misuse of the chassis levelling (sway) function (if either of these options are fitted). See ***Stabiliser Control Option*** and/or ***Chassis Levelling (Sway) Option*** in OPERATION section of the machine Operator Manual.

It is important that the correct functioning of the system is checked at the start of each working day, see ***Daily Functional Check***.

The use of handling attachments for unit loads (for example, bales or bulk bags) can cause a significant increase in the overturning moment through use of the crowd and dump operations. Ensure that use of such attachments does not take the machine beyond its stability limit. Refer to machine Load charts.

⚠ WARNING

Load Control monitors forward machine stability only. Do not use it as a guide to the weight being lifted. Refer to the load charts in the cab. The maximum working load indicated by the Load Control System does not necessarily correspond to the SWL specified on the load charts in the cab.

0184_3

⚠ WARNING

The readout display will be affected by extreme steer lock and extreme axle pivot angles. Before lifting a load, always ensure that the steering is not on full lock and that the rear axle is not fully pivoted.

5-2-4-13

The system is designed to help you to work more safely - it is not a substitute for skill and common sense!

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LC4 Indicator Display

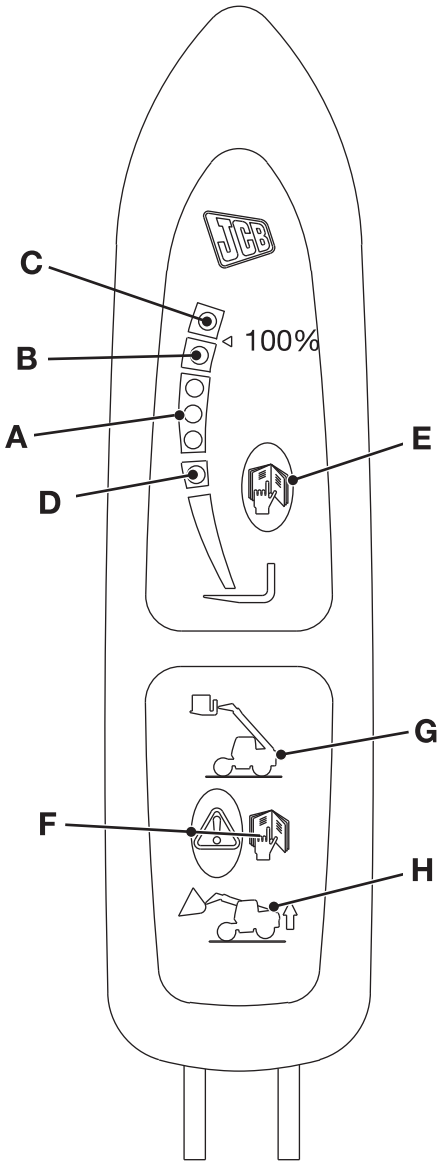


Fig 115.

Table 9.

Item	Description	Function
A	Green LEDs (3)	Safe when lit
B	Amber LED	Caution when lit - approaching machine stability limits
C	Red LED	Danger when lit - machine at limit of stability
D	Power ON indicator	
E	Display button	
F	Mode change button	
G	Load Control mode symbol	Lit when Load Control mode selected, flashes when red LED **C** is lit (in Load Control mode)
H	Ground Work mode symbol	Lit when Ground Work mode selected

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Load Control Mode

When the machine is started, Load Control Mode is selected automatically (indicator **G** lit) and should remain engaged whenever the machine is being used for loading and placing operations.

A sensor measures the load exerted on the rear axle and sends a signal to the indicator. The indicator converts the signal into a display in the form of three green LEDs **A**, one amber LED **B** and one red LED **C**. The LEDs illuminate progressively as the load on the rear axle decreases, that is, as the machine approaches the point at which it will tip forward.

⚠ WARNING

Look at the indicator lights frequently while lifting or handling loads. As more lights show, take extra care with control lever movements. Do not jerk the levers or make sudden changes of direction.

5-2-4-4

All LEDs flash as the load nears the maximum working limit. If this happens, move the load into a stable position by retracting the boom (this is the best option, if possible), lifting the boom or reducing the load.

If the load exceeds the maximum working limit, the red LED **C** illuminates and an audible warning activates.

Any movement of the load which would further reduce the rear axle load is now prevented. This means that extend, lower, crowd and dump functions are all disabled.

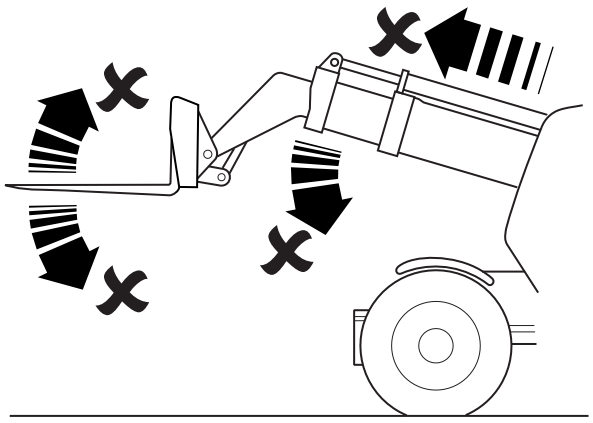


Fig 116.

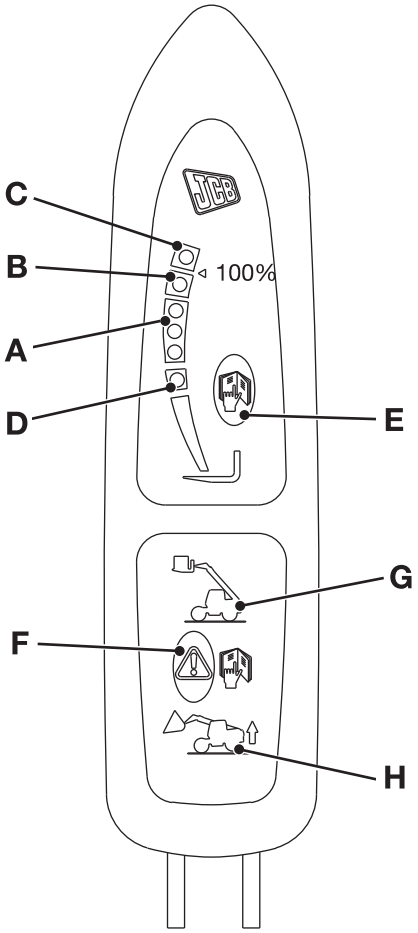


Fig 117.

In Load Control mode, the boom lower hydraulic supply is progressively reduced (derated) as the weight on the rear axle becomes less, ensuring that the load movement is stopped smoothly and without jerking. The tilt hydraulic flow is also restricted; this restriction is constant throughout the range. The extend function operates as normal until the limit is reached.

It is, therefore, a characteristic of the system that lowering and tilt movements are slightly slower than when Ground Work mode is selected. This is normal and does not indicate a machine fault.

You must use either retract **J** or lift **K** to put the machine back into a stable condition, or reduce the load, if possible.

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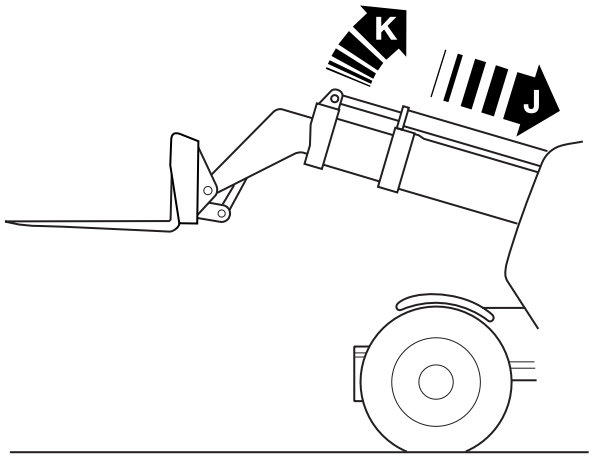


Fig 118.

Under certain conditions, for example, if you attempt to lift a load which is too heavy for the machine, the LCS may activate. In this situation, it may be that the boom is already fully retracted and cannot be raised. If it is not practical to reduce the load to allow the lift to continue, then you will have to select Emergency Override. ⇨ *Emergency Override (121)*.

The boom may only be raised above 57° if the stabilisers are down. Make sure that the stabiliser indicator lights are lit before attempting to raise the boom above 57°.

⇨ *Interlock System (157)*

⚠ WARNING

Incorrect operation of the crowd/dump functions (when laden) can cause the machine to become unstable and loss of the load. The LLMC does not prevent such operation and you must operate within the machines limits.

5-2-7-10

Ground Work Mode

This should be selected only when the machine is used as a wheeled loader. ⇨ *Filling a Shovel (153)*.

Before changing mode, fully retract and lower the boom and remove any load.

To select Ground Work mode, press and hold button **F** for 5 seconds. If the load moment is within allowable limits, all LEDs flash while button **F** is pressed. Release button F and symbol **H** lights, showing that the system is now in Ground Work mode.

If the load moment is too great to permit safe use of Ground Work mode, the system remains in Load Control mode. No change takes place, symbol **G** remains lit and symbol **H** remains unlit.

It is necessary to retract the boom or to reduce the load before again attempting to change to Ground Work mode.

In Ground Work mode, the hydraulic supplies for the lowering, extension and tilt movements are not derated and all the controls work as normal.

LEDs **A** to **D**, display button **E** and the audible alarm all work as in a machine equipped with a standard LLMI, warning the operator when the machine is nearing its maximum working limit (ie, when it could tip forward).

⚠ WARNING

Look at the indicator lights frequently while lifting or handling loads. As more lights show, take extra care with control lever movements. Do not jerk the levers or make sudden changes of direction.

5-2-4-4

The Load Control features of the system do not operate in Ground Work mode. You must watch the LED display and use the load charts, together with the boom angle and extension markers.

Before changing mode, fully retract and lower the boom and remove any load.

To return to Load Control from Ground Work mode, press and hold button **F** for 5 seconds. Providing the load moment is within limits, the LEDs flash and symbol **G** lights.

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If the load moment is too great to permit safe use of Load Control mode, the system remains in Ground Work mode. No change takes place, symbol **H** remains lit and symbol **G** remains unlit.

Note: *The system will reset to Load Control mode when the machine is turned off and on again at the starter switch.*

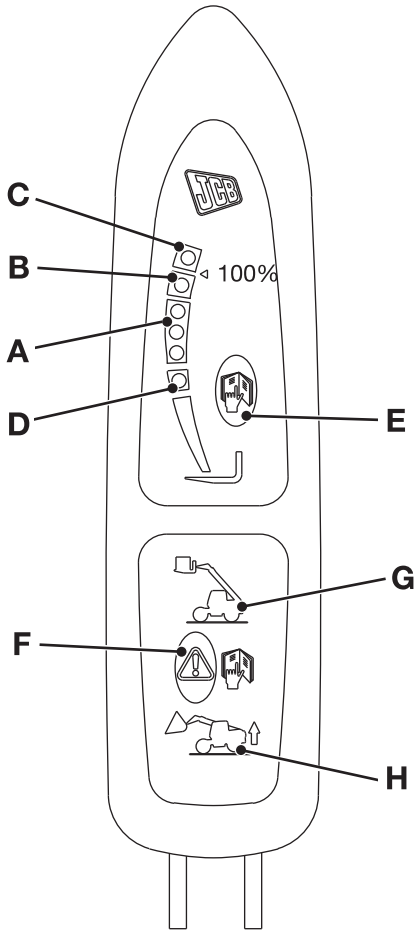


Fig 119.

Emergency Override

⚠ WARNING

Do not use emergency override to attempt to continue handling too heavy a load. You or someone else could be seriously injured or killed.

0185

An Emergency Override is available when working in Load Control mode. This may be required in some circumstances, for example, if the boom is fully retracted but cannot be lowered.

To select emergency override, press and hold button **E** followed by button **F**. The LLMI LEDs and both symbols **G** and **H** flash. Both buttons must be held pressed for ten seconds for Emergency Override to become active, and they then must be held pressed to remain in Emergency Override. If either button is released, the system returns to Load Control mode.

Once in Emergency Override mode, the machine operates as normally except the lower function which operates at a reduced fixed speed.

⚠ WARNING

In override mode the machine is not protected. Only use it to reduce the load moment of the machine. Never exceed the limits set by the load chart, extension markers or angle indicator.

0186

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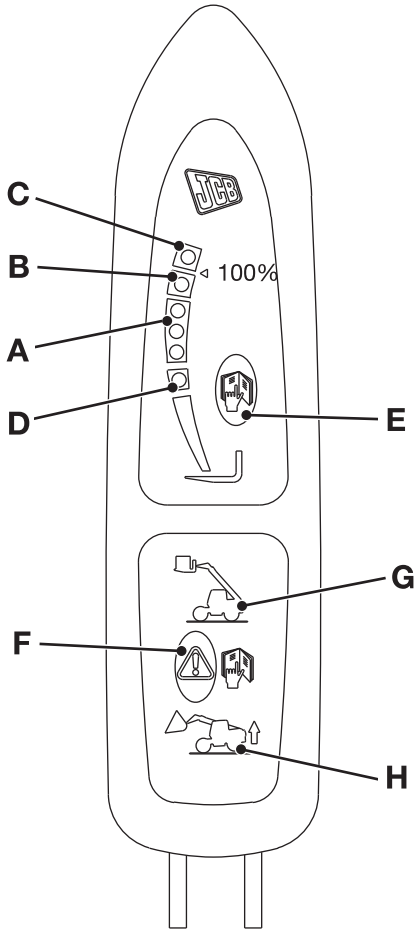


Fig 120.

Daily Functional Check

At the start of each shift, you need to check that the LCS is working.

1 Park the machine (unloaded) on level ground with the engine running. Apply the park brake and place the forward/reverse lever in the neutral position.

2 The green LED **D** at the bottom of the display illuminates to show that the indicator is receiving power.

3 Press the display button **E** and release.

4 All LEDs on the indicator flash and the audible alarm sounds if the unit is functioning correctly.

Note: *If a system fault is detected, various combinations of LEDs indicate fault codes.* ***⇨ Diagnostic Fault Codes (124)***.

5 Raise the stabilisers, if fitted, and then select boom raise. The boom should stop at 57°.

⇨ Interlock System (157)

6 Lower the boom, put down the stabilisers. Check that stabiliser leg lights illuminate. Select boom raise. The boom should raise fully.

7 Select a suitable load (for example, a pack of blocks). Make sure that the machine is on level ground and apply the park brake.

8 With the stabilisers up, position the boom so that the load is about 500mm clear of the ground. Extend the boom slowly and carefully, watching the green LEDs **A** progress up the scale, followed by the amber LED **B**. When the red LED **C** flashes, extension should stop.

9 At this cutout point, and the engine at idle, select boom lower. Nothing should happen. Select dump/ crowd. Nothing should happen. Increase the engine speed to around 1500 to 2000 rpm. Again select lower, dump and crowd. Nothing should happen.

10 Reduce the engine speed. Select boom raise. The boom should raise. Select boom retract. The boom should retract. Use retract and lower to place the load on the ground.

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Note: *If any test gives results other than that stated, contact your JCB distributor.*

⚠ WARNING

If the system is faulty, contact your JCB distributor. Do not try to repair it yourself.

0206

⚠ WARNING

Do not tamper, modify or try to disable the LLMC as this can damage the operation of both the LLMI and LLMC permanently. A defective LLMI or LLMC may allow the operator to exceed the limits of stability and can cause the machine to overturn, serious injury or death.

5-2-7-9

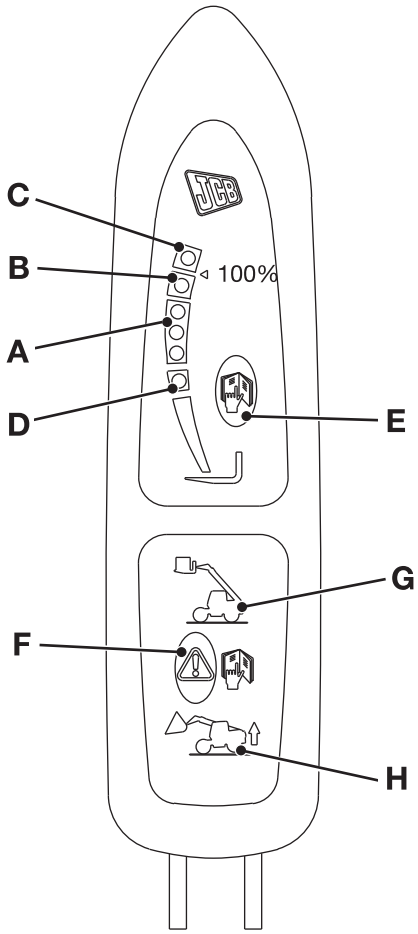


Fig 121.

Setting the Volume and Brightness

⇨ *LLMI - Setting the Volume and Brightness (111)*.

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Diagnostic Fault Codes

When the system detects a fault, the audible alarm will sound and various combinations of lights on the display will indicate a fault code for approximately 10 seconds.

The audible alarm and the fault code display cancel after 10 seconds and ALL LEDs on the display will flash continuously as long as the fault remains. Press and release display button **E** to show the fault code for a further 10 seconds.

When the fault clears, the display will return to normal.

⚠ WARNING

If the system is faulty, contact your JCB distributor. Do not try to repair it yourself.

0206

If any of these fault codes are displayed, switch the starter key off and on again. Contact your JCB distributor if the fault does not clear.



Error Code 1 - Transducer signal fault

Transducer disconnected or wiring damaged.



Error Code 2 - Calibration out of range

System is incorrectly calibrated.



Error Code 3 - Calibration required

System not calibrated.



Error Code 4 - Display unit faulty

The display box has detected an internal error.



Error Code 5 - Low battery voltage

Battery voltage is below 9 Volts.



Error Code 6 - Fault in LCS manifold

Note: *This code will be accompanied by either or both of the mode symbols lighting, either continuously or flashing. Note pattern of mode symbol illumination.*

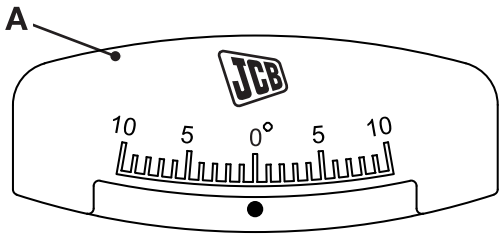
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Inclinometer

P5-2010_3

The lateral position of the machine is indicated by an inclinometer **A** fitted in the cab. Use the inclinometer to check that the machine is level before operating the boom. The machine is level when the inclinometer shows zero degrees (0°). Reposition the machine if a level position cannot be achieved.

For more information, refer to ***Use of Machines on Gradients or Slopes***.



391520-1

Fig 122.

Beacon

In certain territories you will be breaking the law if you do not fit a rotating beacon before you travel on public highways - make sure you are complying with local laws.

Note: *Be careful when you operate the machine with a beacon. The total height of the machine is increased when the beacon is in the operating position.*

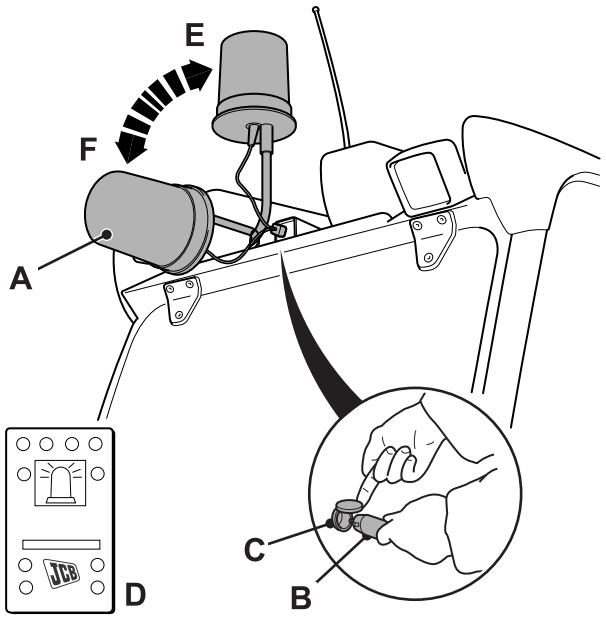
1 Put the beacon **A** on the cab roof.

Note: *The beacon is held in position by a magnetic base.*

2 Put the plug **B** into the cab roof socket **C**.

3 Use the switch **D** to operate the beacon. The indicator light in the switch comes ON when the beacon is operating.

The beacon **A** shown is permanently fitted. When in use it should be raised as at **E**. When not in use it should be lowered as at **F**.



710910-3

Fig 123.

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Fire Extinguisher (if fitted)

Location

T2-061

The fire extinguisher is found below the operator seat and is held in position by a stowage bracket. Keep the fire extinguisher in this position until you need to use it.

Operation

T2-041_3

⚠ WARNING

Do not use the fire extinguisher in a confined space. Make sure that the area is well ventilated during and after using the fire extinguisher.

4-2-3-1

⚠ WARNING

After any use, the extinguisher should be replaced or serviced.

4-2-3-2

Make sure that you understand how to use the fire extinguisher. If necessary, refer to the instructions found on the fire extinguisher.

Only try to extinguish a fire if the circumstances permit and your safety is not endangered. If necessary, contact your nearest fire department.

Using the fire extinguisher:

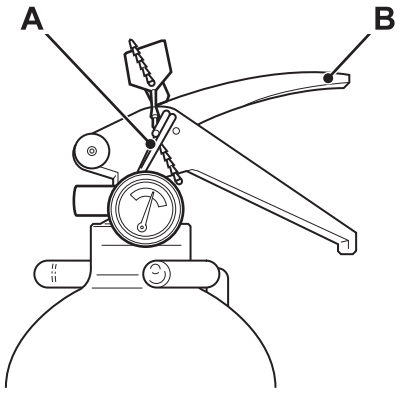
1 If the circumstances permit and your safety is not endangered, move the machine to a safe place to prevent the fire from spreading.

2 Remove extinguisher from its stowage bracket.

3 Remove safety pin **A**.

4 Aim directly at the fire from an upwind position, if possible.

5 Squeeze trigger **B** to operate the extinguisher, release the trigger to stop the flow.



S170520-3

Fig 124.

The fire extinguisher should be inspected daily. Refer to ***Routine Maintenance, Fire Extinguisher (if fitted)***.

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Before Starting the Engine

P5-2033_3

Note: *Read* ***Operating Environment*** *in Operation section if you will be using the machine in very cold or very hot climates.*

Note: *If the fuel tank has been empty or if any part of the fuel system has been drained or disconnected, the fuel system must be primed before attempting to start the engine. See* ***Bleeding the System****, Maintenance section.*

1 The park brake should have been engaged when the machine was last parked. But if it is not already engaged, engage it now.

⚠ DANGER

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

2-2-3-4

2 Make sure that the attachment is on the ground.

⚠ CAUTION

On machines fitted with hose burst protection valves the attachments cannot be lowered with the engine stopped. On these machines start the engine and lower the attachments before doing the walk round inspection.

2-2-3-5

3 For your own safety (and others) and for a maximum service life of your machine, do a pre-start inspection before starting the engine.

a If you haven't already done it, do a walk round inspection of the outside of the machine. See ***Before Entering the Cab***. Also, complete the daily checks as detailed in the Service Schedules.

b Remove dirt and rubbish from the cab interior, specially around the pedals and control levers.

⚠ WARNING

Keep the machine controls clean and dry. Your hands and feet could slide off slippery controls. If that happens you could lose control of the machine.

2-2-3-6

c Remove oil, grease and mud from the pedals, control levers and the steering wheel.

d Make sure that your hands and shoes are clean and dry.

⚠ WARNING

Loose articles can fall and strike you or roll on the floor. You could be knocked unconscious, or the controls could get jammed. If that happens you could lose control of the machine.

2-2-3-7_1

e Remove or secure all loose articles in the cab - such as lunch boxes, tools etc.

f Inspect the ROPS/FOPS structure for damage. Get your JCB Distributor to repair any damage. Make sure all its securing bolts are fitted and correctly tightened.

g Check around the cab for loose or missing bolts, screws etc. Replace or tighten where necessary.

h Inspect the seat belt and its mountings for damage and excessive wear.

⚠ 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

i Check that the following are in working order:

Lights, Warning Lights, Horn, Indicator Lights, All Switches, Direction Indicators, Hazard Warning Lights, Windscreen Washer and Wipers (if fitted).

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4 Adjust the seat so that you can comfortably reach all the driving controls. You should be able to apply full brake pedal travel with your back against the seat back.

5 If fitted, adjust the armrest so that you can reach and operate the controls without stretching.

6 If possible, adjust the steering column so that you can reach the steering wheel and the steering column switches without stretching.

7 Set the rear view mirror(s) to give you a good view close behind the machine when you are correctly seated.

8 Fasten the seat belt.

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Starting the Engine

1 Read and comply with ***Before Starting The Engine***.

2 Put the Forward, Reverse lever in neutral.

The engine will not start unless the forward, reverse lever is in neutral.

3 The battery isolator key must be fitted and switch on before attempting to start the engine. ⇨ ***Battery Isolator (243)***.

⚠ WARNING

Exhaust Gases

Breathing the machine exhaust gases can harm and possibly kill you. Do not operate the machine in closed spaces without making sure there is good ventilation. If possible, fit an exhaust extension. If you begin to feel drowsy, stop the machine at once and get into fresh air.

INT-2-1-10_2

4 If an immobiliser is installed, then you must disarm the immobiliser before you can start the engine. ⇨ ***Immobiliser (if fitted) (131)***

5 Start the engine.

a Normal engine start.

i Slightly depress the accelerator pedal.

Note: *If the temperature is above -6°C (21°F), the cold climate heater warning light will flash momentarily to indicate the system is functioning correctly.* ⇨ ***Warning Lights (81)***.

ii Turn the starter switch to position **III** and hold it there until the engine starts.

b Cold climate engine start, -6°C (21°F).

i Turn the starter switch to position **I**, the cold start inlet manifold heater warning light will come ON. ⇨ ***Warning Lights (81)***.

ii Fully depress the accelerator pedal to the floor.

iii When the warning light goes OFF, turn the starter switch to the 'start' position **III** and hold it there until the engine starts.

Note: *Do not operate the starter motor for more than 10 seconds without the engine firing. If the engine fires but does not fully start, do not operate the starter motor for more than 40 seconds. Let the starter motor cool for at least two minutes between starts.*

6 Release the starter key as soon as the engine starts. The switch will return to `IGN' position **I**.

⚠ WARNING

Do not use ether or other starting fluids to assist cold starting. Using these fluids may result in an explosion causing possible injury and/or damage to the engine.

3-2-1-9

7 Ease off on the accelerator pedal to reduce engine speed.

8 Once the engine has started, check that all the warning lights have gone off. Do not race the engine until the oil pressure low light has gone out. ⇨ ***Warning Lights (81)***. Racing the engine too soon could damage the turbo-charger due to under lubrication. Check that the audible alarm is silent.

Note: *The engine noise and or tone may be louder than usual when cold. This is normal and is due to the fuel injection pump being advanced. The engine will become quieter when the engine reaches normal operating temperature.*

Note: *550/560-80 machines are fitted with a Vari-Speed hydraulic cooling fan. The speed of the fan will vary according to operating conditions. The fan speed may also reduce when the braking system is charging, this is not a fault.*

Note: *If any warning lights fail to go off, or come on while the engine is running, stop the engine as soon as it is safe to do so.*

9 On 550/560-80 machines operate the brake pedal to make sure that the Power Braking system is fully charged.

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10 Operate the hydraulic services to ensure each function is working correctly and to help warm up the hydraulic system.

Do not operate attachments until the hydraulic oil has reached its normal working temperature.

The LLMC system (if fitted) requires the hydraulic oil temperature to be sufficiently warm for effective operation. Refer to ***LLMC Warm-Up Procedure*** and ***Daily Functional Check***.

11 Machines with 3-stage booms only:

3-stage booms can go out of phase if the hydraulic cylinders are not fully retracted regularly. Check the boom stages are phased correctly before working with the machine. Refer to ***Boom, Re-phasing of 3-Stage Booms***.

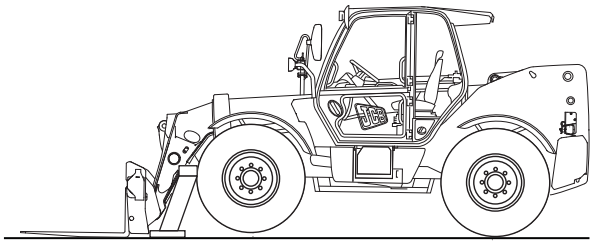
Note: *New engines do not require a running-in period. The engine/machine should be used in a normal work cycle immediately; glazing of the piston cylinder bores resulting in excessive oil consumption, could occur if the engine is gently run-in. Under no circumstances should the engine be allowed to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

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Immobiliser (if fitted)

There are two different JCB immobiliser systems, one uses a keypad and the other a unique key system.

Note: *If your machine has an immobiliser system installed, then your JCB dealer should enable the system as part of the standard Machine Installation. If you prefer that the system is not enabled, then you must tell your JCB Dealer. Your JCB Dealer can enable the system at a later date. Machines with immobilisers installed should always be parked as the instructions in Stopping and Parking the Machine i.e. Boom and attachment lowered to the ground and, where fitted, stabilisers should also be lowered to the ground.*



T065060

Fig 125.

Keypad Immobiliser System

T2-028_6

To Disarm the Immobiliser to Allow the Machine to be Used

Before attempting to disarm the immobiliser check that the machine is ready to start and that you have your four digit PIN number available.

The green LED will illuminate every time that a keypad button is fully depressed. Do not operate buttons with sharp objects, they may damage and disable the keypad.

If you make an error entering your code and you realise this before pressing the ENT button, then pressing the MD button cancels inputs and allows you to re-commence.

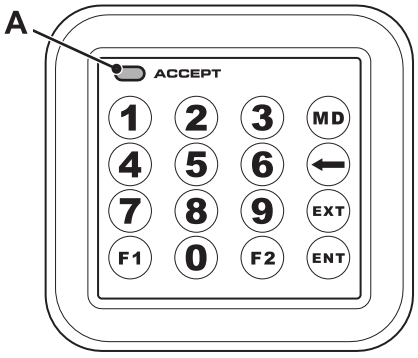
However if the PIN number is incorrectly entered five times the Immobiliser will lock for 15 minutes. In this event it is recommended that you contact the machine owner for confirmation of the PIN number.

The PIN code will have to be entered every time that the ignition is switched off for longer than two minutes.

To Disarm the Immobiliser

1 Insert the starter key and turn the key to position 1.

2 Enter your four digit PIN number using the keypad and then press the ENT button



T023290-2

Fig 126.

The LED ***A*** will illuminate for 3 seconds if the PIN is correct and the machine can be started.

3 If an incorrect PIN is entered the unit will lock. The LED will flash twice rapidly, pause and then flash twice again and will continue this pattern until the starter key is turned off. In this event return to step **1** to try again.

Note: *After five failed attempts the system will lock.*

To Arm the Immobiliser

1 Stop the engine and remove the starter key.

The immobiliser arms automatically after 2 minutes. The red LED **A** flashes for 60 seconds then goes OFF.

Note: *If you restart the engine within 2 minutes, the system disarms automatically.*

To Add a New or Additional PIN Code

Before attempting to add a new or additional code check that the machine is ready to start and that you have your six digit master code and your new 4 digit PIN number available.

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If you are unsure of the master code number or your new PIN number then do not commence this procedure.

The keypad immobiliser can be programmed to accept up to 14 different four digit PIN codes, any of which will allow the machine to be started.

1 Insert starter key and turn key to position 1.

2 Within 8 seconds of turning the starter key to position 1, press the ***MD*** button.

3 Within 8 seconds of pushing the ***MD*** button enter your six digit master code using the keypad and then press the ***ENT*** button.

4 The LED will flash three times to indicate acceptance of the code.

5 Within 59 seconds of the three flashes press the ***MD*** button.

6 Within 8 seconds of pressing the ***MD*** button enter your four digit PIN number using the keypad and then press the ***ENT*** button.The LED will flash four times to indicate that the new PIN has been successfully entered.

7 Turn starter key off and then a minimum of 5 seconds later turn the key to position 1.

8 The new PIN is now entered and recorded.

9 If another PIN is to be entered turn the starter key off and return to step 1.

To Delete All PIN Codes

Deleting all the PIN codes does not allow the Immobiliser to be bypassed. A four digit PIN code will have to be entered before the machine can be started.

If you are unsure of the master code number or your new PIN number then do not commence this procedure.

1 Insert the starter key and turn the key to position 1.

2 Within 8 seconds of turning the starter key to position 1, press the ***MD*** button.

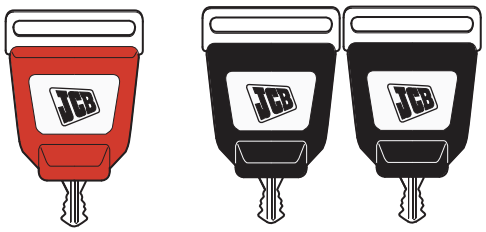
3 Within 8 seconds of pushing the ***MD*** button enter your six digit master code using the keypad and then press the ***ENT*** button.The LED will flash three times to indicate acceptance of the code.

4 Press the buttons in the following sequence allowing less than 8 seconds between each button press, ***ENT***, ***MD***, ***F1***, ***ENT***.

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'Unique Key' Immobiliser System

Each machine is supplied with a master key (red) and two starter keys (black). The master key is used by the operator to program the starter keys. You must use a starter key to start or operate the machine.



T050110-1

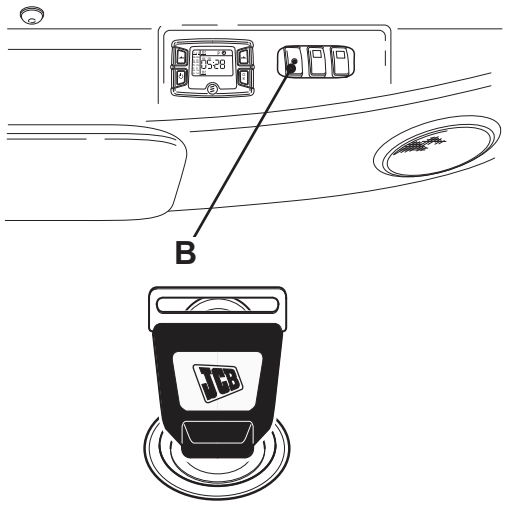
Fig 127.

To Disarm the Immobiliser

1 Put the starter key in the starter switch.

2 Start the engine as shown in ***Starting the Engine*** to arm the immobiliser.

When the engine starts, the red LED **B** comes ON for three seconds then goes OFF.



T023301-2

Fig 128.

To Arm the Immobiliser

1 Stop the engine and remove the starter key.

The immobiliser arms automatically immediately. The red LED **B** flashes for 60 seconds then goes OFF.

To Add a New or Additional Starter Key

Note: *Starter keys can be programmed to start more than one machine.*

1 Put the master key in the starter switch then turn the starter switch to position I. Wait for three seconds.

2 Turn the starter switch to position 0 then remove the master key.

3 Put a new or an additional starter key in the starter switch then turn the starter switch to position I. Wait for four seconds. The new key has been added.

To Remove the Program from all Starter Keys

1 Put the master key in the starter switch then turn the starter switch to position I. Wait for three seconds.

2 Keep the starter switch in position I for 60 seconds, the LED will flash 5 times.

ALL starter key codes have now been deleted from the ECU.

3 Turn the starter switch to position 0 then remove the starter key.

4 Add the required black keys in the system.

Important: *The starter keys will still be able to be used on any other machine on which they have been programmed.*

Note: *If a non programmed or standard key is used, then the following symbol will appear on the LCD screen and the machine will not start.*

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Preparing the Machine for Travel

Introduction

When you travel on the road or on site there are usually local rules and safety regulations for the machine travel position. The ***Preparing for Road Travel*** and ***Preparing for Site Travel*** described on the following pages are recommendations that should help you meet the requirements of these regulations; they are not necessarily the applied law.

Please make sure that before you travel on the road or on site, you and your machine comply with all the relevant local laws - it is your responsibility.

Preparing for Road Travel

Important: *Make sure you will be obeying all pertinent laws and regulations before you take the machine on public roads.*

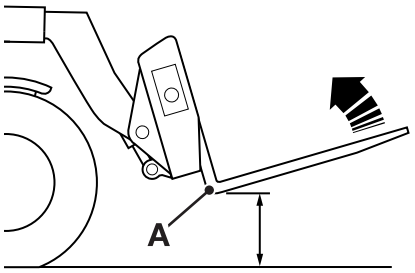
Important: *Machines without headlights and sidelights are designed for site use, you may be breaking local laws if you travel on the road without headlights or sidelights.*

1 In certain countries, legislation requires the front windscreen guard (if fitted) is removed before travelling on public roads.

2 Use the chassis levelling (sway) switch, (if fitted) to set the body of the machine square to the axles. ⇨ ***Chassis Levelling (Sway) Option (98)***.

3 Ensure both stabiliser legs, (if fitted) are fully raised and isolated. ⇨ ***Stabiliser Control Option (100)***.

4 Fully retract the boom. Lower the boom fully then raise it slightly. Tilt the carriage back, to keep the heel of the forks **A** 300 mm (12 in) above the ground.



146601-4

Fig 129.

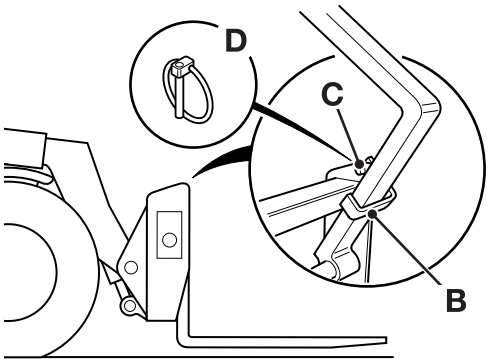
Note: *In certain countries legislation requires the forks to be folded back before travelling on public roads.*

⚠ WARNING

Forks are heavy. Take care when spacing forks or folding back the forks.

0002

Fit fork retention brackets **B** (as required) and secure with retaining pin **C** and locking pin **D**.



320750-3

Fig 130.

5 In certain countries, legislation requires the forks to be removed and safety guard **E** fitted. Check local requirements.

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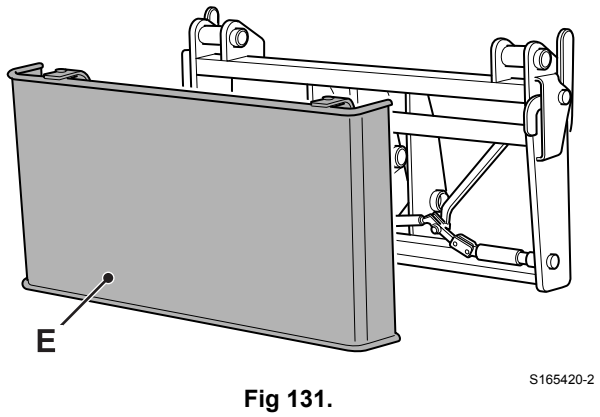


Fig 131.

6 If pivoting lights are fitted, complete step 6a, otherwise continue at step 7.

a Move the rear light cluster **F** to the horizontal position. The cluster **F** is spring loaded by its rubber mounting bush. To swing it up or down, whichever is applicable to your machine, pull the cluster slightly rearward to disengage, then swing it to the new position.

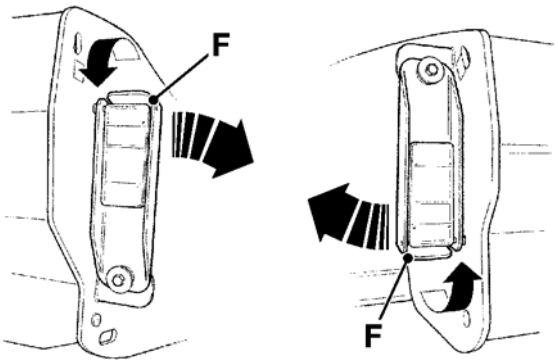


Fig 132.

⚠ CAUTION

In low visibility or at night, we recommend removing the forks before travelling on public roads. Transport the forks on a suitable vehicle.

5-2-3-2

7 In the UK, before travelling on public roads, it is your responsibility as a user to comply with The Road Vehicles (Construction and Use) (Amendment) Regulations 1997 (`Bridge Bashing Regulations'). By way of guidance only, the following steps may be taken to comply:

a Always assess your route for overhead structures, such as bridges, which could be damaged by your machine.

b Utilise the restraining device (Described) to ensure the equipment is in the travelling position.

Important: *While this information is believed to be correct, JCB cannot be aware of all circumstances in which the JCB machine may be operated on a Public Highway and it is the responsibility of the user to ensure compliance with the regulations.*

With the boom in the travel position, fit restraining strap **G** over the boom and attach to the lifting lugs on the chassis side plates.

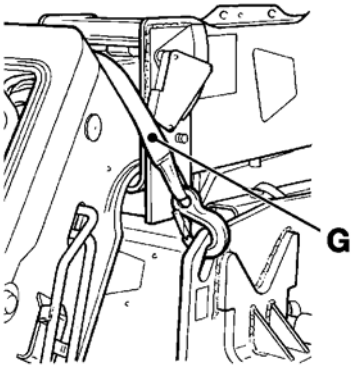


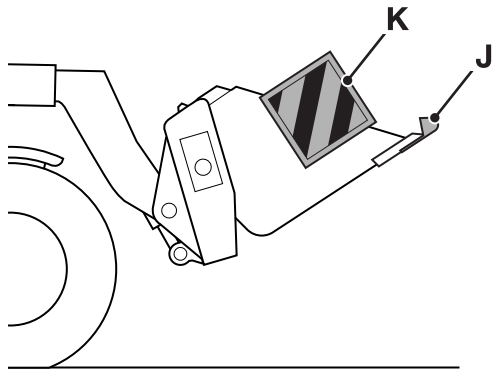
Fig 133.

8 If any optional attachments are fitted, make them safe as detailed in ***Optional Attachments*** section.

When travelling with a bucket, tooth guard **J** must be fitted.

Important: *In certain countries, legislation requires safety marker plate **K** to be fitted before travelling on public roads.*

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271200-2

Fig 134.

⚠ CAUTION

Do not travel on public roads with the machine loaded.

5-2-3-1

9 Lock the controls (as required).

10 Align the road wheels. Refer to ***Wheel Alignment (Maintenance Section)***.

11 Select 2-wheel steer, do not use crab steer or 4-wheel steer on public roads.

12 Select 2-wheel drive.

13 Check that all road lights are working correctly.

14 The traffic regulations may require you to have a rotating beacon operating on some public roads. ⇨ ***Beacon (125)***.

15 If towing, refer to ***Tow Hitch Option***.

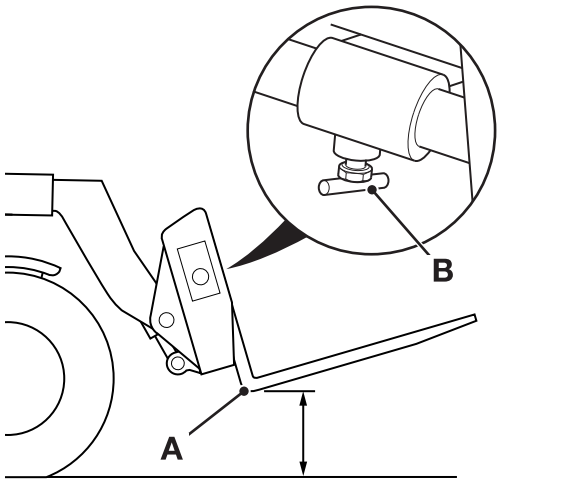
16 Switch on Smooth Ride System (if fitted).

Preparing for Site Travel

1 Use the chassis levelling (sway) switch, (if fitted) to set the body of the machine square to the axles. ⇨ ***Chassis Levelling (Sway) Option (98)***.

2 Ensure both stabiliser legs, (if fitted) are fully raised and isolated. ⇨ ***Stabiliser Control Option (100)***.

3 Fully retract the boom. Lower the boom fully then raise it slightly. Tilt the carriage back, to keep the heel of the forks **A** 300 mm (12 in) above the ground.



111660-2

Fig 135.

Note: *When attachments are fitted, position the boom in the 'low carry' position so that the right hand mirror is not hidden from the operator's view.*

4 Fully tighten the clamping screws **B** to prevent side movement of the forks (if fitted).

5 Move the rear light cluster **F** to the vertical position. The cluster **F** is spring loaded by its rubber mounting bush. To swing it up or down, whichever is applicable to your machine, pull the cluster slightly rearward to disengage, then swing it to the new position.

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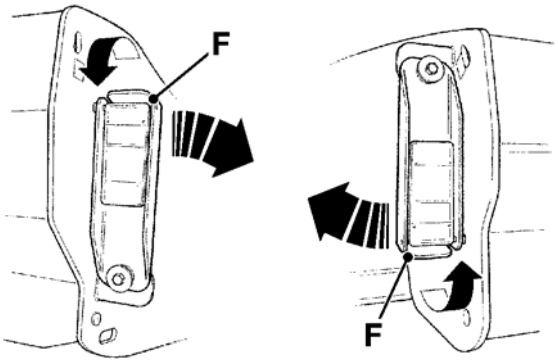


Fig 136.

6 Select the steer mode required.

7 If any optional attachments are fitted, make them safe as detailed in ***Optional Attachments*** section.

8 Switch on Smooth Ride System (if fitted).

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Smooth Ride System (SRS)

P5-2056

⚠ DANGER

Do not attempt to use the boom to raise the front of the machine. With the Smooth Ride System activated, the machine will drop suddenly when the control lever returns to the neutral position.

Switch off SRS before working on the machine

0032_1

The Smooth Ride System (SRS) will enhance machine operation by smoothing the ride across uneven surfaces.

It is intended for use when travelling, but will also enhance machine operation when used in loading and rehandling operations.

The boom will move up and down independently of the machine with SRS selected. Make sure there is adequate ground clearance below the boom and attachment to allow for this movement.

Note: *The boom must be fully lowered, or the weight supported on the ground, before the system will engage.*

To activate the system:

1 Press and hold switch **A** fully down.

2 Operate the boom lower control, until indicator lights **B** illuminate. SRS is now engaged.

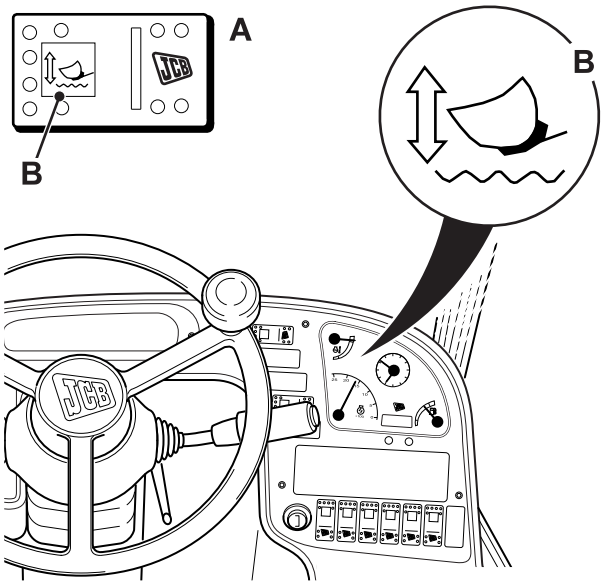
Note: *Indicator lights **B** remain illuminated when SRS system is engaged.*

If both indicators do not illuminate, make sure the boom is fully lowered before repeating steps 1 and 2.

3 Release the boom lower control and switch **A**.

Switch off SRS before placing loads where greater precision is needed.

The SRS system will need to be re-selected every time the starter key is switched off, or the power supply is interrupted.



760121-3

Fig 137.

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Getting the Machine Moving

Operating Practices

⚠ WARNING

Hillsides

Operating the machine on hillsides can be dangerous if proper precautions are not taken. Ground conditions can be changed by rain, snow, ice etc. Check the site carefully. Operate in first gear on hillsides, when applicable, keep all attachments low to the ground. Never coast down a hill with the engine off or the transmission in neutral.

INT-2-2-7

The machine can be put in motion in any gear. But do not over work the engine unnecessarily by using too high a gear for example, on a hill. Operating in too high a gear will overheat the torque converter fluid.

When moving the machine, keep it under control at all times. Stay alert for obstructions and possible hazards.

⚠ WARNING

Do not dismount a moving machine.

3-2-3-12

Do not use the pedals as footrests.

The 550/560-80 machine has a Power Braking system. Make sure that you are familiar with the pedal pressure required to stop the machine.

Do not coast the machine in neutral, you will not have full control. Also, coasting the machine will damage the transmission.

⚠ WARNING

Slopes

Always drive a LOADED machine FORWARD UPHILL and in REVERSE DOWNHILL.

Always drive an UNLOADED machine in REVERSE UPHILL and FORWARD DOWNHILL.

9-1-3-3

Do not turn on or drive across a slope.

Select the necessary gear before starting down a slope. Use the same gear you would use to go up the slope. Do not change gear on the slope.

If the load will be pushing the machine on a downslope, select first gear (1) before starting downhill.

Use the brake pedal to prevent overspeeding down a slope.

Approach deep mud in first gear (1) with the front wheels straight.

Take particular care when reversing. If the machine has mirrors, make sure your view of the mirrors is not obstructed. Ensure that the way behind is clear before reversing. Ensure that the reverse alarm is functioning correctly and can be heard clearly by people around the machine.

Note: *Various types of reverse alarm can be installed on your machine, to suit different operating environments. There may be local regulations which control the type of reverse alarm which may be used in particular areas. Make sure the correct type of reverse alarm is installed on your machine.*

⚠ WARNING

Should the machine start to roll over, you can be crushed if you try to leave the cab. If the machine starts to roll over, do not try and jump from the cab. Stay in the cab, with your seat belt fastened.

INT-2-1-12

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Limited Slip Differential (LSD)

T2-003

This is an option which can be specified on some machines to enhance traction in difficult conditions. This is achieved by transferring a high proportion of the available driving torque from the spinning wheel to the gripping wheel. The limited slip differential operates automatically and should not be confused with differential locks.

Wheel slip is an indication that the limited slip limit has been reached. On high traction surfaces (concrete etc.) noise and judder may be experienced when the LSD is operating, particularly on full steering lock. The level of noise depends on the weight of the machine, the ground conditions and steering angles. Noise in the LSD is not an indication of axle damage.

Operating Procedure

After you have warmed up the engine and tested the park brake, move off as described below.

Note: *Control and switch locations are provided within this publication.* *⇨ Cab Layout (🗋 48)**.*

1 Check your seat belt and seat.

a Make sure that your seat belt is correctly fastened.

b Make sure that the seat is correctly adjusted.

2 Select the required steer mode.

Important: *Remember that the steering may temporarily remain in the last selected mode until the rear wheels pass through the 'straight ahead' position.*

⚠ WARNING

In 4-wheel steer, the back end of the machine will swing out when you make a turn. Check for clearance before making a turn.

5-2-3-3

3 Select Transmission Disconnect mode - on or off (if fitted)

4 Engage a gear. Select the required gear using gear select switch.

⚠ WARNING

Powershift Transmission

Do not change from a high gear to a low gear (for instance, 4th to 1st) in one sudden movement when the machine is moving. Otherwise the machine will rapidly decelerate, you or others could be killed or seriously injured. When selecting lower gears, allow the engine speed to drop before each gear change.

2-1-1-9_1

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⚠ WARNING

You and others could be killed or injured if you reverse direction on the move, because the change in direction will be sudden and without warning. Always stop the machine and drop engine speed to idle before changing from forward to reverse and vice versa.

9-2-2-2

a Select Forward or Reverse and move off.

⚠ WARNING

Travelling at High Speeds

Travelling at high speeds can cause accidents. Do not reverse in a high gear with full throttle. Always travel at a safe speed to suit working conditions.

INT-5-3-3

a Check the boom is in the travel position.

b Push the brake pedal(s) hard down.

c Select forward or reverse.

Note: *If the park brake is engaged when forward/reverse is selected, the Park Brake Engaged Indicator will come on and an audible alarm will sound.*

d Release the park brake.

e Make sure it is safe to move off, then release the brake pedals and push down on the accelerator pedal. The machine will move smoothly away.

⚠ WARNING

Engine/Steering Failure

If the engine or steering fails, stop the machine as quickly as possible. Do not operate the machine until the fault has been corrected.

INT-2-1-5

f While the machine is travelling slowly, check the steering and brakes. Do not drive the machine unless the steering and brakes are working correctly. If you are not sure, assume they are faulty.

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Stopping and Parking the Machine

Note: *Control and switch locations are provided within this publication.* ⇨ ***Cab Layout (*** 🗋 ***48)***.

1 Stop the machine on dry and level ground where the machine will not be a hazard or danger.

⚠ WARNING

Parking

An incorrectly parked machine can move without an operator. Follow the instructions in the Operator Manual to park the machine correctly.

INT-2-2-4_2

2 Ease up on the accelerator pedal and down on the brake pedals to bring the machine to a smooth stop. Keep the foot brakes on until the park brake has been engaged and the drive disengaged (Steps 3 and 4).

⚠ CAUTION

The park brake must not be used to slow the machine from travelling speed, except in an emergency, otherwise the efficiency of the brake will be reduced. Whenever the park brake has been used in an emergency, always renew both brake pads.

4-2-1-1_2

3 Pull the park brake lever fully up. Make sure that the park brake indicator lights up. Release the foot brakes.

⚠ WARNING

Do not dismount a moving machine.

3-2-3-12

4 Set the transmission to neutral. Make sure the lever is in its detent position. Make sure that the park brake indicator light is extinguished.

⚠ DANGER

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

2-2-3-4

5 Retract and lower the boom, rest the forks flat on the ground.

Note: *Do not leave a 3-stage boom machine with the boom fully elevated and at full extension. This can allow oil to seep past one of the makeup valves and cause the boom sections to become out of phase. This will damage the boom hose management system when the boom is retracted.*

⚠ CAUTION

Rams

The efficiency of the rams will be affected if they are not kept free of solidified dirt. Clean dirt from around the rams regularly. When leaving or parking the machine, close all rams if possible to reduce the risk of weather corrosion.

INT-3-2-10

6 Lock the controls. ⇨ ***Control Locks (*** 🗋 ***102)***.

7 It is recommended that turbocharged engines are run at 1000 RPM (approximately) and reduced load for 2 - 3 minutes before shut down. This will allow the turbocharger to cool.

8 If you are leaving the machine, make sure that all switches are set to off. If necessary, leave the hazard warning and/or side lights switched on. Remove the starter key.

9 Use the handholds and step when you climb down from the machine. If you are leaving the machine, close and latch all windows and lock both doors. Make sure that the filler cap is locked on.

⚠ WARNING

Entering/Leaving

Entering or leaving the cab or canopy must only be made where steps and handrails are provided. Always face the machine when entering and leaving. Make sure the step(s), handrails and your boot soles are clean and dry. Do not jump from the machine. Do not use the machine controls as handholds, use the handrails.

INT-2-1-7_1

10 At the end of a working cycle or if the machine is being left unattended, provided the lights are not required remove the battery isolator key (if fitted). ⇨ ***Battery Isolator (*** 🗋 ***243)***.

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Working with the Machine

Operating Practices and Site Safety

T2-057_2

This section explains some techniques and procedures for efficient and safe use of the machine and its attachments. Attention is also drawn to the various safety aspects of operating on site.

Read and understand this section before you start working with the machine.

Make sure that you have had adequate training and that you are confident in your ability to operate the machine safely before you use it. Practice using the machine and its attachments until you are completely familiar with the controls and what they do.

With a careful, well trained and experienced operator, your machine is a safe and efficient machine. With an inexperienced or careless operator, it can be dangerous. Do not put your life, or the lives of others, at risk by using the machine irresponsibly.

Before you start to work, tell your work mates what you will be doing and where you will be working. On a busy site, use a signalman.

Appropriate job site organisation is required in order to minimise hazards that are caused by restricted visibility. Job site organisation is a collection of rules and procedures that coordinates machines and people that work together in the same area. Examples of job site organisation include:

- Restricted areas
- Controlled patterns of machine movement
- A system of communication

You and/or your company could be legally liable for any damage you may cause to public utilities. It is your responsibility to make sure that you know the locations of any public utility cables or pipes on the site which could be damaged by your machine.

Before doing any job not covered in this manual, find out the correct procedure. Your local JCB distributor will be glad to advise you.

There are a wide variety of situations in which your machine may be used. Consequently, in all cases, the applicability of these notes must be determined by the person seeking to apply them, on the basis of his/her own judgement, in the light of the conditions in which use is intended and subject to all relevant statutory requirements.

The information in this section is given in good faith and in light of the best information available, JCB can accept no responsibility for the recommendations, advice, statements, opinions and conclusions expressly or by implication and gives no warranty or representation of assurance in respect of the accuracy of the same.

Remember that your machine is mobile. Whenever possible, manoeuvre it into a position which combines safety and efficiency. But if you have to choose, always remember that: Safety must come first.

Clothing and Safety Equipment

T2-069

Do not wear loose clothing or jewellery that can get caught on controls or moving parts. Wear protective clothing and personal safety equipment issued or called for by the job conditions, local regulations or as specified by your employer.

Danger Zone

T2-046

The danger zone is the circular area around the machine where the moving parts can reach. During operation of the machine, keep all persons out of the danger zone. Persons in the danger zone could be injured. Refer to ***Specifications.***

Safety Practices

P2-2019_3

Read ***Operating Safety (Introduction Section)***, plus the following information.

⚠ WARNING

Reworking Old Sites

There could be dangerous materials such as asbestos, poisonous chemicals or other harmful substances buried on the site. If you uncover any containers or you see any signs of toxic waste, stop the machine and advise the site manager immediately.

2-2-5-5

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⚠ WARNING

Water Supplies and Drains

Before you start using the machine, check with your local public water supplier if there are buried pipes and drains on the site. If there are, obtain a map of their locations and follow the advice given by the water supplier.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near buried pipes and drains.

2-2-5-6

⚠ WARNING

Fibre Optic Cables

If you cut through a fibre optic cable, Do not look into the end of it, your eyes could be permanently damaged.

8-2-9-20

⚠ WARNING

Underground Gas Pipes

Before you start using the machine, check with your local gas company if there are any buried gas pipes on the site.

If there are buried gas pipes we recommend that you ask the gas company for any specific advice regarding the way you should work on the site.

Some modern gas pipes cannot be detected by metal detectors, so it is essential that an accurate map of buried gas pipes is obtained before any excavation work commences.

Hand dig trial holes to obtain precise pipe locations. Any cast iron pipes found should be assumed to be gas pipes until contrary evidence is obtained.

Older gas pipes can be damaged by heavy vehicles driving over the ground above them.

Leaking gas is highly explosive.

If a gas leak is suspected, contact the local gas company immediately and warn all personnel on the site. Ban smoking, ensure that all naked lights are extinguished and switch off any engines which may be running.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near buried gas pipes.

2-2-6-1_1

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Working with the Boom

Introduction

P5-2064

⚠ DANGER

Under no circumstances should personnel be lifted into the air without using an approved and properly secured platform. Failure to follow this warning could result in death or serious injury.

0004

⚠ WARNING

Maintain correct tyre pressures to avoid upsetting the lateral stability of the machine. Inspect tyres daily for signs of damage, cuts or embedded objects which could cause loss of pressure.

0005

⚠ WARNING

Stop the machine and apply the park brake before conducting any lifting operations.

0020

⚠ CAUTION

Loading and unloading on soft or uneven ground can be hazardous. The machine could tip over and you could be killed or injured. Make sure that the ground is level and firm before loading and unloading. Whenever possible, avoid soft or uneven ground when carrying a load.

5-2-3-7

⚠ CAUTION

Make sure you know the weight of the load before trying to lift it. Raise the load only a few centimetres at first, to check that the machine is stable. Lower the load straight away if the machine begins to feel unstable. If the machine feels unstable when the boom is raised and extended, always retract the boom before lowering it.

Do not exceed the loading limits shown on the Load Charts (see Using the Load Chart and Boom Indicators, in OPERATION section).

5-2-3-6_1

⚠ CAUTION

Travelling too fast or with the load too high can make the machine tip over. Keep the load close to the ground when travelling.

Do not go faster than walking pace when the machine is carrying a load. Drive carefully over bumps and curbs.

Do not operate the boom/carriage controls while the machine is moving.

5-2-3-5_1

Practice with palleted loads first. Do not handle awkward loads until you can handle palleted loads safely and confidently.

Make sure that any location where a load is to be placed is strong enough to hold the weight of the load.

Look in the direction of travel and keep a clear view of the way ahead. Seek assistance if forward vision is obscured by a bulky load.

Particular care is required when driving off level ground, see ***Use of Machines on Gradients or Slopes*** (OPERATION section).

Do not carry stacked loads that are higher than the fork carriage.

Drive at a speed consistent with conditions. Slow down when travelling on wet, slippery or loose surfaces.

Drive with care to minimise bouncing over rough surfaces. This can result in loss of load.

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Risk Assessment

P5-2065

⚠ DANGER

Factors affecting machine stability include size and type of load, angle of elevation, the distance the boom is extended, ground condition and wind speed and direction.

It is the responsibility of the operator to assess the wind conditions and size of load before operating the machine.

It is the responsibility of the operator to assess the terrain, surface roughness, firmness of ground (remember that when wet, the ground will not support the same loads as when dry) before operating the machine.

0074

It is the responsibility of the competent people planning the job and operating the machine to make judgement as to the safe use of the machine, having taken into account the specific application and conditions of use at the time.

It is essential that a risk assessment of the work to be done is completed and that the operator complies with any safety precautions that the assessment identifies.

If you are unsure of the suitability of the machine for a specific task, contact your JCB distributor who will be pleased to advise you.

The following considerations are intended as suggestions of some of the factors to be taken into account when making a risk assessment. Other factors may need to be considered.

Important: *An adequate risk assessment depends on the training and experience of the operator. Do not put your life or the lives of others at risk.*

General

An area selected as a loading/unloading area should be large enough to accommodate all the wheels of the machine and stabilisers (if fitted). It should not be necessary for the machine to make tight turns with an elevated load.

The area should be of consolidated firm ground, capable of accepting the weight of the machine and its load without significant deformation. Ideally, it should be substantially level in both planes, that is no gradient of more than 2.5% (1 in 40) in either plane.

However, your machine may safely be used for loading/unloading operations in areas which are not substantially level provided that its design capabilities are not exceeded and that the operator is satisfied that no part of the operation is outside the scope of his/her training and experience.

The capabilities of your machine are extended if stabilisers or sway control are fitted.

Traffic routes should be of consolidated firm ground with no gradient more severe than the following:

Maximum up slope:	15% (1 in 7)
Maximum down slope:	15% (1 in 7)
Maximum lateral slope:	15% (1 in 7)

These figures apply only to the machine in it's normal travelling mode, that is with boom retracted and with the upper surface of the heels of the fork arms not more than 500mm (20in) above mean ground level, and travelling no faster than walking pace. Particularly in the case of a lateral slope, some form of restraint on the load may be necessary.

Observe the maximum wading depth of this machine. Water can enter the engine and axles, and the cooling fan can be damaged if the machine is operated in deeper water.

Personnel

- Are all persons who are going to take part in the operation adequately trained, experienced and competent? Are they fit and adequately rested? A sick or tired operator is a dangerous operator.
- Is supervision needed? Is the supervisor adequately trained and experienced?
- As well as the machine operator, are any assistants or lookouts needed?

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The machine

- Is it in good working order?
- Have any reported defects been rectified?
- Have the daily checks been carried out?
- Are the tyres still at the correct pressure and in good condition and is there sufficient fuel to complete the job?

The load

- How heavy is it? Is it within the capabilities of the machine?
- How bulky is it? The greater the surface area, the more affected it will be by wind speeds.
- Is it an awkward shape? How is the weight distributed? Uneven loads are more difficult to handle.
- Is there a possibility of the load shifting whilst being moved? If so, can it be secured on the forks?

Loading/unloading area

- Is it level? Any gradient of more than 2.5% (1 in 40) should be carefully considered.
- Is more than one direction of approach to the load possible? Approaching across the gradient should be avoided, if possible.
- Is the ground firm? Will it support the weight of the machine when loaded?
- How rough is the ground? Are there any sharp projections which could cause damage, particularly to the tyres?
- Are there any obstacles or hazards in the vicinity, for example, debris, excavations, man-hole covers, power lines?
- Is the space adequate for safe manoeuvring?
- Are any other vehicles or persons likely to be in or to enter the area whilst operations are in progress?

The route to be traversed

- How firm is the ground, will it provide adequate traction and braking?
- How steep are any gradients, up/down/across? Cross gradients are particularly hazardous, is it possible to detour to avoid them?

Weather

- How windy is it? High wind will adversely affect the stability of a loaded machine, particularly if the load is bulky.
- Is it raining or is rain likely? The ground that was firm and smooth when dry will become uneven and slippery when wet, and it will not offer the same conditions for traction, steering or braking.

Lifting and Loading Operations

P5-2067

Ensure that all local and national legislation governing operations such as lifting and loading are fully satisfied before operating the machine. This should include the selection of the correct model of machine for the operation, and the planning of the lifting operation itself.

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Fork Ratings

⚠ WARNING

Do not exceed the total rated load capacity of the forks being used. Forks can break resulting in a loss of load and possible injury.

0003

JCB approved forks for this machine are marked with a maximum load capacity rating **A**. The rating shows the maximum load capacity in kilograms (kg) that the forks can carry safely at the maximum load centre **B** of 500mm (20 inches).

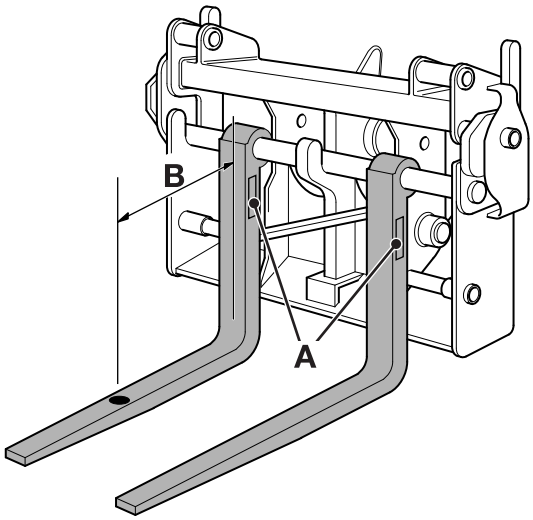
The total load rating for two forks will be the addition of their single rated capacity.

Forks must be used in matched pairs.

The maximum rated load capacity of the machine is shown in ***Performance Dimensions (Specifications Section)***. The forks used on this machine must have a total load rating which is equal to, or exceeds the rated load capacity of the machine.

If the load rating of the machine is different to the load capacity of the forks, the lower value must be used as the overall load capacity.

All lifting equipment, including forks and their mountings, need regular inspection and testing by a competent person to ensure they are fit for purpose. Refer to ***Fit for Purpose Tests for Lifting Equipment (Routine Maintenance Section)***.



346990-2

Fig 138.

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Handling Palleted Loads

P5-2069_2

⚠ WARNING

Make sure you know the weight of the load before lifting or placing it.

Do not exceed the Safe Working Load of your machine. Do not angle or extend the boom outside the limits shown on the Load Charts in the cab. See Using the Load Charts and Boom Indicators (in OPERATION Section).

5-2-4-8_1

⚠ CAUTION

Load and unload on firm, level ground. Always be alert for possible hazards. Take special care when turning or reversing.

5-2-4-7

Loading

⚠ WARNING

Forks are heavy. Take care when spacing forks or folding back the forks.

0002

⚠ CAUTION

One-Fork Lifting

A load lifted on one fork can slip off. Never lift a load with one fork.

5-1-4-3

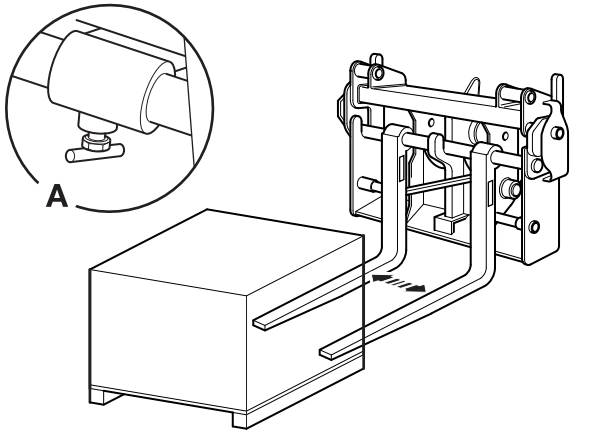
⚠ CAUTION

Fork Spacing

Loads can fall off incorrectly spaced forks. Always space the forks correctly for the load. Make sure the forks are completely under the load before lifting.

5-1-4-2

1 Space the forks as wide as possible to suit the load. Tighten the fork clamping screws **A**.

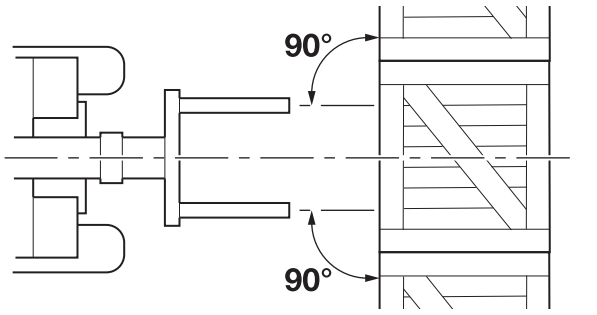


111940-1

Fig 139.

2 Put the forks in the horizontal position. Fully retract the boom.

3 Approach the load straight-on, not at an angle, with all wheels straight. Stop the machine, leaving enough room to manoeuvre the boom. Engage the park brake. Put the transmission in neutral.

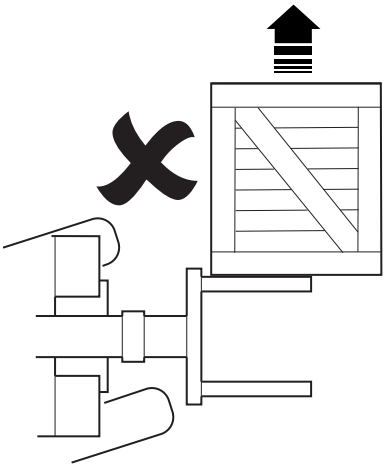


111780-1

Fig 140.

Note: *Do not use the side of the forks or carriage to move the load. Damage to the forks can result from this type of operation.*

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C107380-1

Fig 141.

4 If the load is on a high platform you may have to raise the boom to allow you to get the machine close enough to the load.

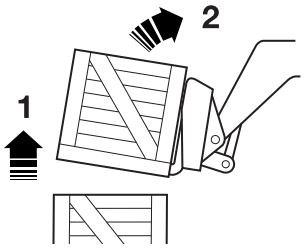
5 Extend the boom, or drive the machine, to insert the forks under the load. Stop when the carriage just touches the load. Check the boom extension/angle, make sure they are in limits.

⚠ WARNING

If the machine starts to feel unstable when you begin lifting the load, lower the load immediately.

5-2-4-9

6 Raise the load slightly. Tilt the carriage back. Retract the boom fully and lower it into the travel position.



111790-1

Fig 142.

7 Carefully drive the machine to the unloading point.

Unloading

⚠ CAUTION

Unloading

Never unload the forks by stopping the machine suddenly. Follow the procedures in the Operator Manual for unloading.

5-1-4-4_2

1 Approach the unload area on centre, with all wheels straight. Stop the machine, leaving enough room to manoeuvre the boom. Make sure you will not exceed the loading limits shown on the Load Chart.

2 Engage the park brake. Put the transmission in neutral.

3 Position the load just above its required position. If stacking box pallets, ensure that the stack is straight and square. For extra stability, stagger the top row. Refer to ***Stacking Loads***.

4 Lower the load into position. Make sure the load is level.

5 Carefully withdraw the forks. Depending on the height of the load, you may have to raise or lower the boom as the forks come out.

6 When the forks are clear of the load, fully retract the boom. Lower the boom into the travel position.

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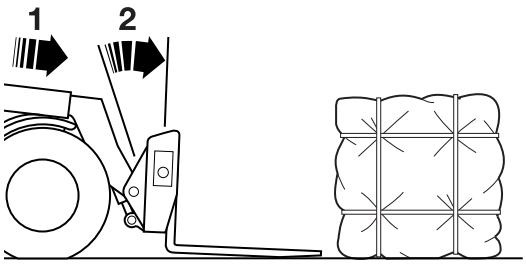
Handling Bales

P5-2071

Handle bales only after you fully understand how to handle palleted loads. The basic procedure is the same, but remember the following points:

Lifting Bales

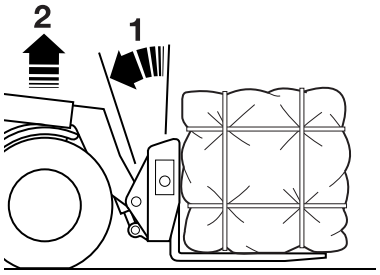
1 Lower the boom and tilt the carriage forward as shown.



S111810-3

Fig 143.

2 Extend and slightly raise the boom to insert the forks under the load. Tilt the carriage back. Put the boom in the travel position.

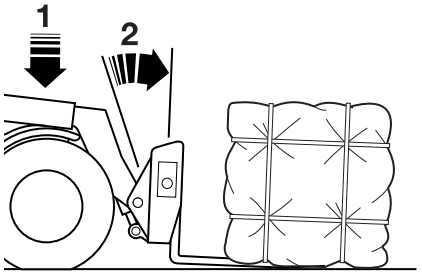


S111810-4

Fig 144.

Placing Bales

1 Position the boom so that the bale is directly above its required position. Lower the boom and tilt the carriage forward slightly, so that the forward edge of the bale rests on the ground.



S111950-3

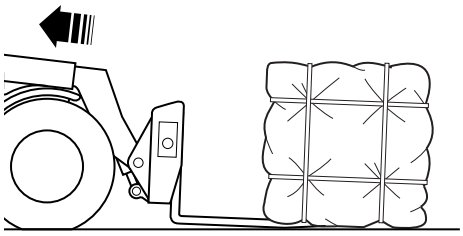
Fig 145.

2 Retract the boom, withdrawing the forks from under the bale. When the forks are clear, return the boom and carriage to the road travel position.

⚠ WARNING

The bale may have to be manhandled off the forks. If so, stop the engine before allowing anyone to approach the forks.

5-2-4-10



S111950-4

Fig 146.

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Handling Uneven Loads

P5-2072

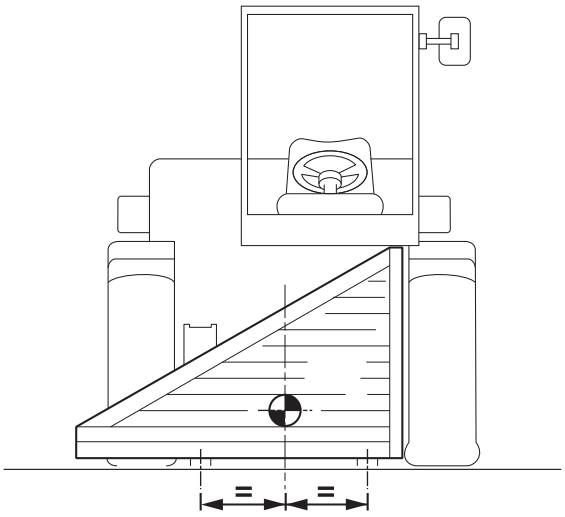
Important: *Use extra caution when operating the boom and carriage with an uneven load.*

1 Find the load's Centre of Gravity. On packaged loads it may be marked on the box.

If you cannot find out the load's centre of gravity, do the following: Make trial lifts at different positions until you are sure the load is stable on the forks. Do not raise the load more than a few centimetres when you make the trial lifts.

2 Position the machine so that the load's centre of gravity is halfway between the forks. ⇒ *Fig 147. (152)*.

3 Pick/Place the load, this will depend on what kind of load it is. If it is palleted, follow the procedure for palleted loads. If it is not palleted, it may be necessary to secure the load to the forks using suitable chains. Stop the engine before allowing anyone to approach the forks.



A239570

Fig 147.

Stacking Loads

T2-070

Box Pallets

Stack box pallets straight and square. For extra stability, stagger the top row.

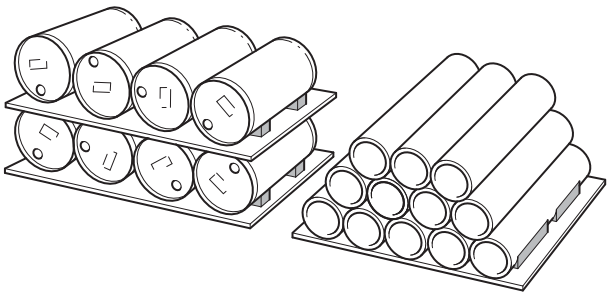


151990-3

Fig 148.

Cylindrical Loads

Stack cylindrical loads tightly together and level. Wedge both ends of each row. If building a pyramid stack, wedge both ends of the bottom row.



151990-4

Fig 149.

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Filling a Shovel

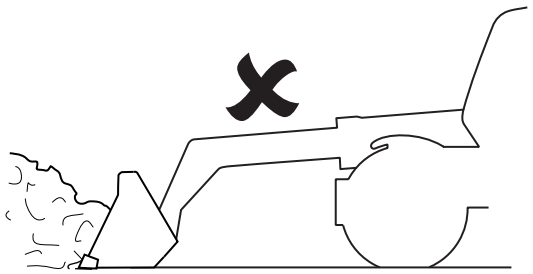
P5-2073

Your machine may be used with a wide variety of attachments, including shovels, see ***Optional Attachments***. The following paragraphs are intended to bring some of the relevant considerations to your attention. They are not intended to be comprehensive, nor to be a substitute for adequate training. Make sure you are trained before using any attachment.

⚠ CAUTION

Do not load a shovel with the boom extended. This may cause serious damage to the boom.

0070



382960-2

Fig 150.

⚠ WARNING

When loading with material from a high bank or pile, remove any overhang first. Watch out for sliding material. If overhanging material falls, you and your machine could be buried.

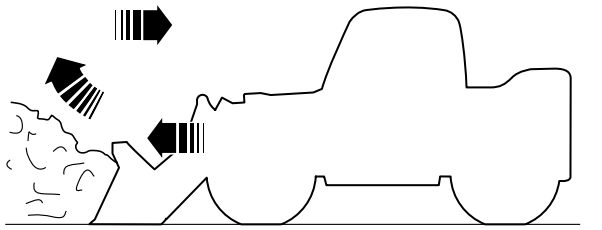
2-2-6-3

As the shovel enters the pile, start rolling the shovel back while raising it at the same time. This will sweep the shovel up the pile, gathering material as it goes.

When you are loading from a pile of loose material, start at the bottom and follow up the face as shown. Approach the pile with the shovel level and skimming the ground.

In tightly packed material, start at the top and work down.

When removing material from a stockpile, start at a shovel's height from the base. Once the height of the stockpile has been reduced, begin loading from the base.



382980-1

Fig 151.

Pressing the transmission dump switch will give more power to the loader and speed the operation. Try to fill the shovel in one pass. Half full shovels are less productive.

When moving the load, roll the shovel right back to prevent spillage.

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Loading a Truck

T2-004U_2

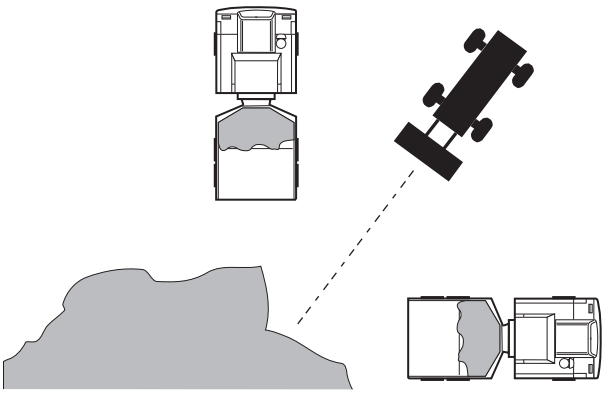
Put the truck(s) at an angle of about 45° to the pile, as shown. This cuts out unnecessary maneuvering. Allow enough distance for the bucket to reach its unloading height while you are traveling, without slowing down.

Keep the wind on your back. This keeps dust away from you and your machine.

Move your machine as close as possible to the truck before unloading.

If the truck body is about as long as a bucket's width, tip the load into the center of the truck. If the truck is two bucket-widths long or more, load the front of the truck first.

Do not dump the material in one sudden movement. Roll the bucket forward in stages until it is empty. Use the control lever to rock the bucket back and forth to loosen any sticky material.



145500-2

Fig 152.

Use of Machines on Gradients or Slopes

⚠ WARNING

Ensure that you have been trained and are familiar with the use of machines on gradients, and understand the adverse affects that gradients and site conditions can have on stability. Never use the machine on a gradient if you do not understand the recommended practices for the use of machines in such applications.

0017

There are a number of factors which can adversely affect the stability of the machine and the safety of the machine and operator when used on a gradient.

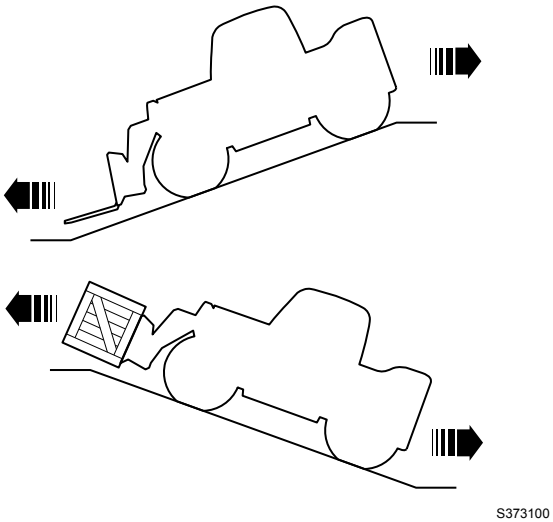
It is essential that a risk assessment of the work to be done is completed, see ***Risk Assessment*** (OPERATION section), and that the operator complies with any safety precautions that the assessment identifies.

Driving Up and Down Gradients

To ensure maximum traction do the following when driving on a gradient.

Drive an unladen machine forward down a gradient and in reverse up a gradient.

Drive a laden machine forward up a gradient and in reverse down a gradient.



S373100

Fig 153.

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Driving Across Gradients

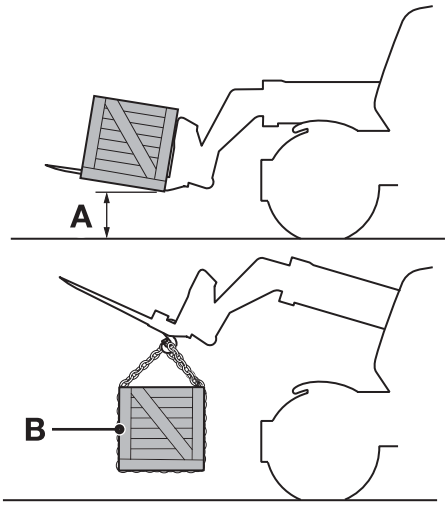
Read and understand the instructions in this manual before you travel across a gradient.

Maximum stability is achieved when the machine is operated on firm level ground. Stability will be reduced when the machine is operated on a cross gradient.

When you travel across a gradient, fully retract the boom and travel slowly at walking pace.

Do not raise the carriage higher than necessary. This would normally be that the lowest point of the load is not more than 500mm (20in) above the ground, with a load which is carried on top of the forks, as shown at **A**. Some loads may be carried suspended below the forks, as shown at **B**. In this case, assess the risk involved before raising the carriage sufficiently to achieve ground clearance.

Remember, be careful, be safe. Your life, or the lives of others could be in danger if you take unnecessary risks.



A348341-5

Fig 154.

Lifting Operations on Gradients

⚠ WARNING

Conducting lifting operations on gradients can be dangerous. The machine can become laterally unstable and tip over if the instructions in this section are not followed and understood. You and others can be seriously injured or killed. Ensure you follow and fully understand the guidelines given in this manual.

0019

Lifting operations should not be undertaken on gradients unless the machine is level across its width (i.e. laterally level).

⚠ WARNING

Stop the machine and apply the park brake before conducting any lifting operations.

0020

Longitudinal and lateral stability are two important safety factors that must be considered if the boom is to be extended, or raised by more than 500mm (20in) above the ground with the machine on a gradient.

Longitudinal Stability

P5-2040_2

Longitudinal (forward) stability is measured and shown by the Longitudinal Load Moment Indicator (LLMI), if fitted, in the cab. Read and understand the section describing the operation of the LLMI before lifting with the machine. See ***Longitudinal Load Moment Indicator*** (OPERATION section).

Always operate the machine within the longitudinal stability limits indicated by the longitudinal load moment indicator (if fitted) or load chart.

Lateral Stability

P5-2043

Ensure you have taken into account all factors that may affect machine stability before a lifting operation is started when working on a gradient. See ***Use of Machines on Gradients And Slopes*** (OPERATION section). Make sure the machine is level across its width to maintain lateral (sideways) stability.

Inclinometer **A** can be used to check if the machine is level.

Level the machine by one of the following methods, depending on machine model and specification.

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Machines with chassis levelling (sway) option can be made level across their width using the sway control facility as shown at **B**. See ***Chassis Levelling (Sway) Option*** (OPERATION section).

Machines with stabilisers can be made level across their width using the stabilisers as shown at **C**. See ***Stabiliser Control Option*** (OPERATION section).

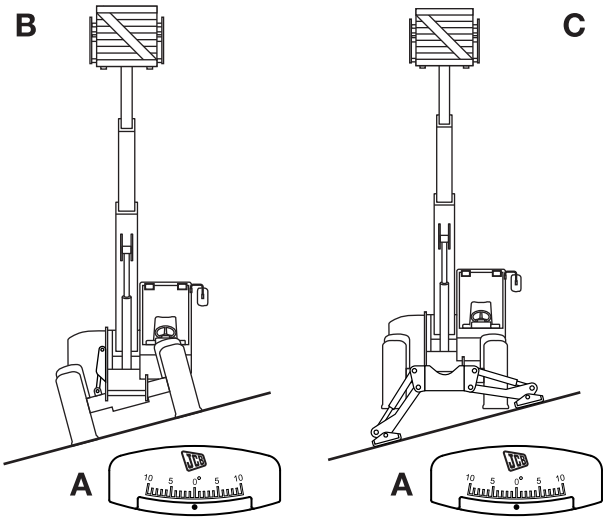


Fig 155.

It is recommended that the machine should be operated on firm, level ground wherever possible for maximum machine stability. ⇒ ***Fig 156. (156)***

Important: *If the machine can not be made level across its width, the operator must complete a risk assessment before attempting a lifting operation. See* ***Risk Assessment*** *(OPERATION section).*

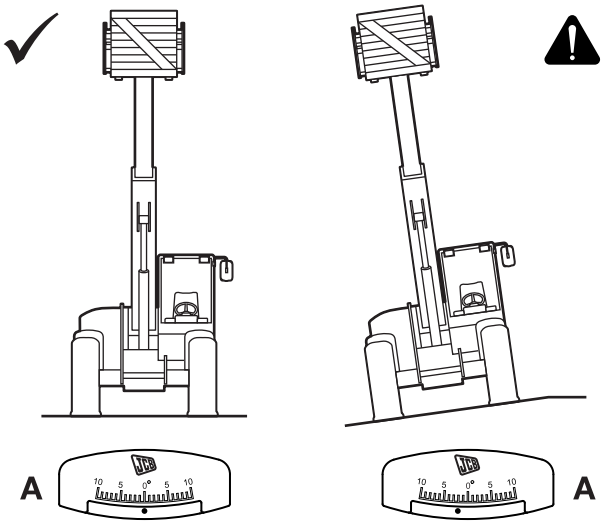


Fig 156.

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Interlock System

Introduction

JCB Loadalls use a system of interlocks to prevent the operation of the machine beyond default limits unless the boom and/or the stabiliser legs are moved to the correct position.

The interlock logic is described in this section.

Chassis Levelling (Sway) Operation

You can not operate the chassis levelling (sway) function if the boom is more than 10° above the horizontal.

Boom and Stabiliser Operation

Machines with 3-Stage Boom

When you operate the boom in zone **A1**, you can move the stabiliser legs to the raised and lowered positions.

When you operate the boom in zone **A2**, the stabiliser function is disabled.

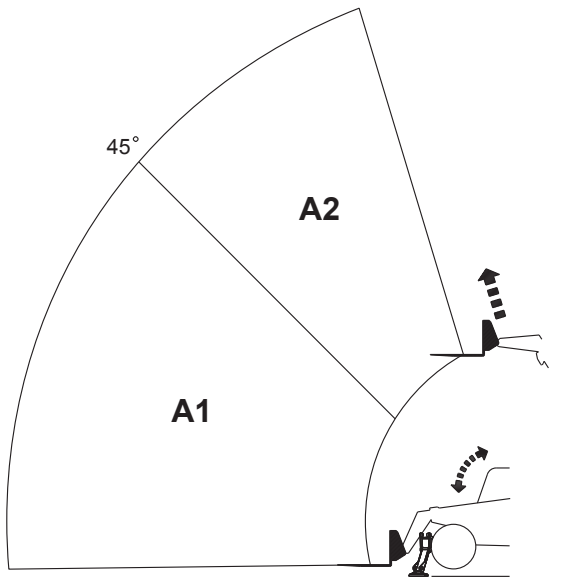


Fig 157. Machines with 3-Stage Boom

Machines with 4 or 5-Stage Boom

When you operate the boom in zone **A1**, you can move the stabiliser legs to the raised and lowered positions.

When you operate the boom in zone **A2**, the stabiliser function is disabled.

To move the boom to zones **A3** and **A4**, you must make sure that the stabiliser legs are lowered before you exit zone **A1**. When you operate the boom in zones **A3** and **A4**, the stabiliser function is disabled.

Machines with 4-stage boom only: When you exit zones **A2**, **A3** and **A4** you can not raise the stabiliser legs unless you lower the boom to zone **A1** first.

Note: *On some 4 or 5-stage machines the 45° interlock is replaced by a 10° interlock dependant upon customer specification.* *⇨ Table 10. (157), ⇨ Fig 158. (158).*

Note: *On 5-stage machines a notable change may occur on the LLMC indicator on transision into or out of zone A4, this is expected as the machine changes control states.*

Table 10.

	540-170	540-200
a	45°	45°
b	57°	45°
c	73°	73°
x	7.09m	7.20m
y	10.64m	13.50m

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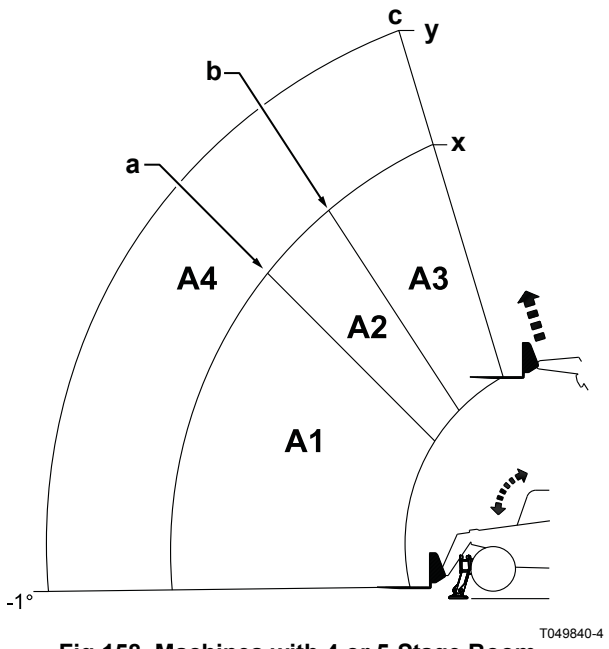


Fig 158. Machines with 4 or 5-Stage Boom

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Operating Environment

Operating in Low Temperatures

T3-069_3

In low temperature situations, take the following precautions. They will make for easier starting and prevent possible damage to your machine.

1 Use the correct viscosity engine lubricating oil.

2 Use the correct viscosity hydraulic oil.

3 If available use a low temperature diesel fuel.

4 Use the correct coolant mixture.

5 Keep the battery at full charge.

6 Fill the fuel tank at the end of each work period. This will help to prevent condensation forming on the tank walls.

7 Protect the machine when not in use. Park the machine inside a building or cover it with a tarpaulin.

8 Install a cold weather starting aid. In very low temperatures, -18°C (0°F) and below, additional starting aids may be needed. Examples are fuel, oil and coolant heaters. Ask your JCB distributor for advice.

Important: *Do not connect two batteries in series to give 24 volts for starting as this can cause damage to the electrical circuits.*

9 Remove snow from the engine compartment before starting otherwise snow could get into the air filter.

Operating in High Temperatures

T3-070

In high temperature situations, take the following precautions to prevent possible damage to the machine.

1 Use the correct viscosity engine lubricating oil.

2 Use the correct coolant mixture.

3 Check the coolant system regularly, keep the coolant at the correct level. Make sure there are no leaks.

4 Keep the radiator/oil cooler clean, regularly remove dirt and debris from the radiator/oil cooler and the engine.

5 Check the fan belt regularly.

6 Check the air vents. Make sure that the air vents to and from the engine compartment are not blocked.

7 Check the engine pre-cleaner regularly (if fitted).

8 Check the battery electrolyte level.

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Tow Hitch Options

Introduction

T2-042_4

Your machine may be equipped with an optional trailer pickup hitch.

Make sure you will be obeying all pertinent laws and regulations before towing.

Make sure that the trailer draw bar is suitable for your machine and has sufficient clearance to enable the machine to turn without fouling.

⚠ WARNING

Examine the tow hitch and the trailer draw bar towing ring for signs of wear before each use. A badly fitting or worn hitch or towing ring could cause loss of the trailer and injury to yourself or other people.

0067

⚠ WARNING

Do not exceed the permitted limits on trailer gross weight or hitch load. The machine may become unstable.

0068

Make sure your tyre pressures are correct and that the loaded trailer does not exceed the maximum gross trailer weight. Refer to ***Specifications, Trailer Towing***.

When towing, the machine must be unladen (without ballast).

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Connecting the Trailer

Mechanical Tow Hitch Option

P5-2058

Use the following procedure to operate the pickup hitch.

1 Engage the park brake.

2 Adjust the mirror(s) to obtain a good view of the tow hitch area.

3 If your machine is fitted with a switch-operated 2/4 wheel drive selector, you can tow in 2-wheel drive if required. But before towing in 2-wheel drive, you must check that the transmission changes automatically to 4-wheel drive when the brake pedal is pressed (i.e. that the 2-wheel drive selected indicator light goes out).

⚠ WARNING

Ensure that no person is between the machine and trailer when the machine is reversing up to the trailer.

5-2-5-11

4 Engage the Trailer. The procedure for engaging the trailer to the tow hitch will depend on the type of trailer. In all cases observe the following precautions:

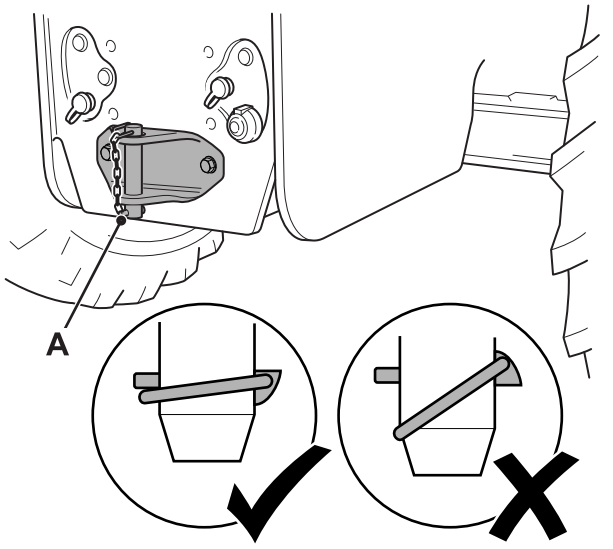
a Ensure that the trailer and its draw bars are correctly positioned for engagement before the machine begins to approach it.

It is essential that the tow bar is parallel with the machine when the pickup hitch is raised and locked.

b If a helper is available to manoeuvre the trailer he should stand well clear of the machine until the tow hitch is correctly aligned with the trailer towing eye.

The helper should not approach the trailer or machine until the machine has been stopped, with the park brake engaged and the engine switched off.

c Once the trailer has been engaged, with pin **A** secured in position, the machine operator must not start the engine until the helper is clear of the machine and trailer.



263891-4

Fig 159.

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Hydraulic Tow Hitch Option

All Machines (Excluding Agri Extra and 550/560-80 Models)

Use the following procedure to operate the pickup hitch.

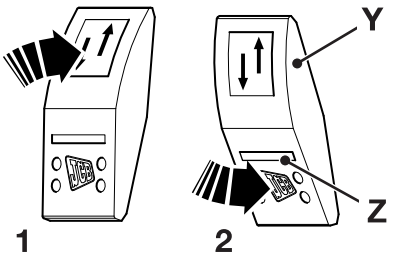
1 Engage the park brake.

2 Adjust the mirror(s) to obtain a good view of the pickup hitch.

3 If your machine is fitted with a switch-operated 2/4 wheel drive selector, you can tow in 2-wheel drive if required. But before towing in 2-wheel drive, you must check that the transmission changes automatically to 4-wheel drive when the brake pedal is pressed (i.e. that the 2-wheel drive selected indicator light goes out).

4 To select the rear auxiliary circuit, set switch **Y** to position **1**. The switch light **Z** should be extinguished.

Note: *Make sure the Hitch/Auxiliary switch lamp is working, ie. set switch **Y** to position **2**.*

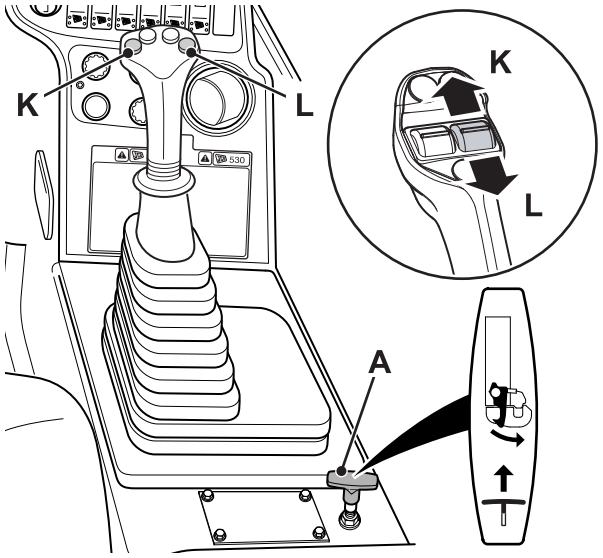


760951-1

Fig 160.

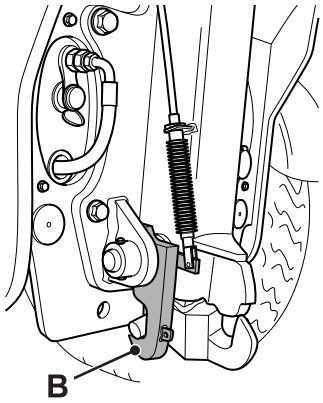
5 Raise the hitch by operating switch **K**/**L**. This will remove the load on locking lever **B**.

6 Pull up and hold release handle **A** to release locking lever **B**, and lower the hitch by operating switch **K**/**L**.



760041-2

Fig 161.



263901-3

Fig 162.

⚠ WARNING

Ensure that no person is between the machine and trailer when the machine is reversing up to the trailer.

5-2-5-11

7 Engage the Trailer. The procedure for engaging the trailer to the tow hitch will depend on the type of trailer. In all cases observe the following precautions:

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a Ensure that the trailer and its draw bars are correctly positioned for engagement before the machine begins to approach it.

It is essential that the tow bar is parallel with the machine when the pickup hitch is raised and locked.

b If a helper is available to manoeuvre the trailer he should stand well clear of the machine until the tow hitch is correctly aligned with the trailer towing eye.

The helper should not approach the trailer or machine until the machine has been stopped, with the park brake engaged and the engine switched off.

c In certain conditions you may have to drive forward when closing the hitch to prevent the pickup hitch overriding the trailer towing hitch.

8 Operate **K**/**L** to raise the hitch. The locking lever **B** will automatically spring back to the engaged position when the hitch is raised.

9 Once the trailer has been engaged, with locking lever **B** secured in position, the machine operator must not start the engine until the helper is clear of the machine and trailer.

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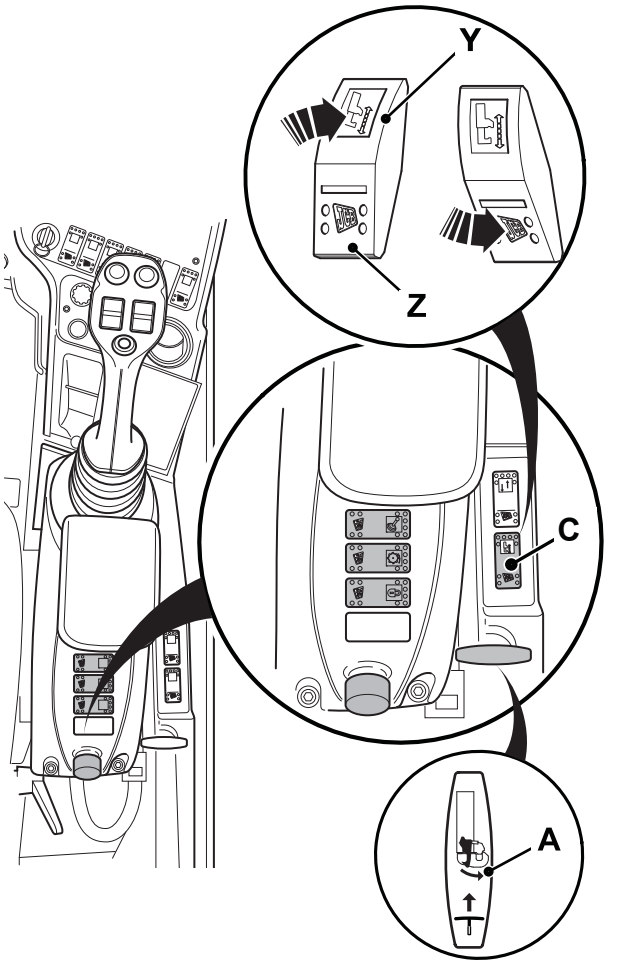
Agri Xtra Models

The trailer hydraulics and hydraulic tow hitch are operated independently of the loader end auxiliaries. You can operate the trailer hydraulics without having to disconnect and reconnect the hydraulic feed from the tow hitch.

Use the following procedure to operate the pickup hitch.

1 Engage the park brake.

2 Adjust the mirror(s) to obtain a good view of the pickup hitch.



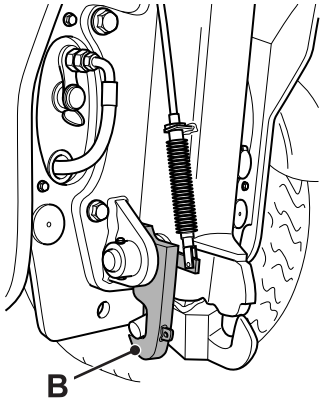
T006800-4-C1

Fig 163.

3 If your machine is fitted with a switch-operated 2/4 wheel drive selector, you can tow in 2-wheel drive if required. But before towing in 2-wheel drive, you must check that the transmission changes automatically to 4-wheel drive when the brake pedal is pressed (i.e. that the 2-wheel drive selected indicator light goes out).

4 Raise the hitch by operating switch **Y**/**Z**. This will remove the load on locking lever **B**.

5 Pull up and hold release handle **A** to release locking lever **B**, and lower the hitch by operating switch **Y**/**Z**.



263901-3

Fig 164.

⚠ WARNING

Ensure that no person is between the machine and trailer when the machine is reversing up to the trailer.

5-2-5-11

6 Engage the Trailer. The procedure for engaging the trailer to the tow hitch will depend on the type of trailer. In all cases observe the following precautions:

a Ensure that the trailer and its draw bars are correctly positioned for engagement before the machine begins to approach it.

It is essential that the tow bar is parallel with the machine when the pickup hitch is raised and locked.

b If a helper is available to manoeuvre the trailer he should stand well clear of the machine until the

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tow hitch is correctly aligned with the trailer towing eye.

The helper should not approach the trailer or machine until the machine has been stopped, with the park brake engaged and the engine switched off.

c In certain conditions you may have to drive forward when closing the hitch to prevent the pickup hitch overriding the trailer towing hitch.

7 Operate **Y**/**Z** to raise the hitch. The locking lever **B** will automatically spring back to the engaged position when the hitch is raised.

8 Once the trailer has been engaged, with locking lever **B** secured in position, the machine operator must not start the engine until the helper is clear of the machine and trailer.

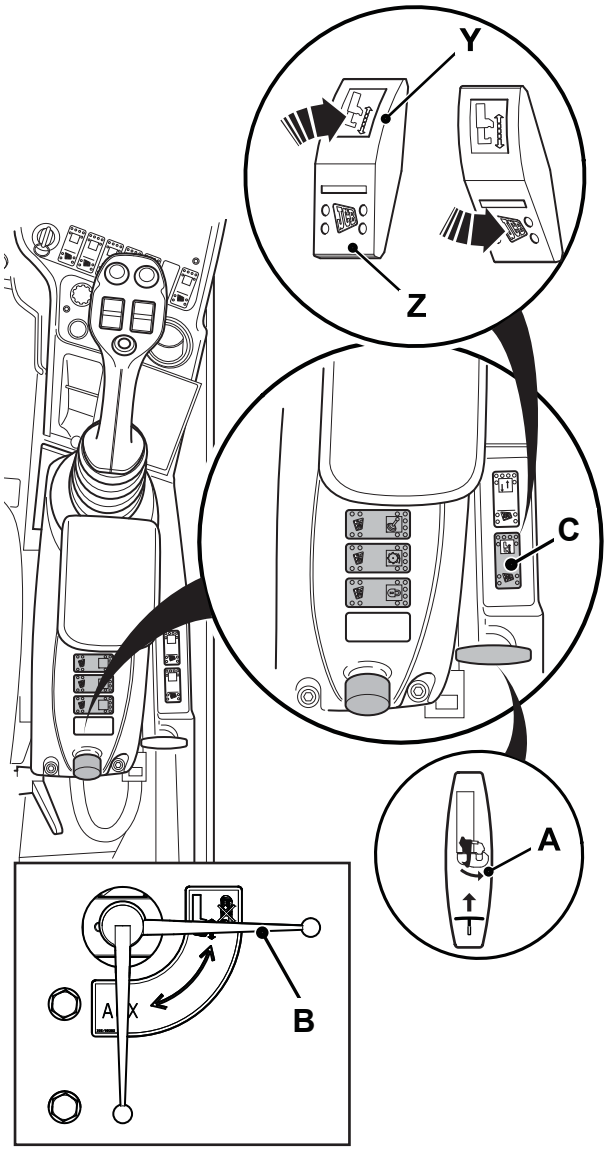
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550/560-80 Models

The trailer hydraulics and hydraulic tow hitch are operated independently of the loader end auxiliaries. You can operate the trailer hydraulics without having to disconnect and reconnect the hydraulic feed from the tow hitch.

Use the following procedure to operate the pickup hitch.

1 Engage the park brake.



C111060

Fig 165.

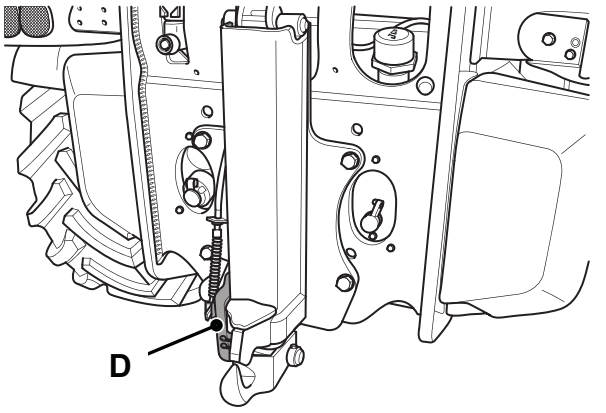
2 Adjust the mirror(s) to obtain a good view of the pickup hitch.

3 If your machine is fitted with a switch-operated 2/4 wheel drive selector, you can tow in 2-wheel drive if required. But before towing in 2-wheel drive, you must check that the transmission changes automatically to 4-wheel drive when the brake pedal is pressed (i.e. that the 2-wheel drive selected indicator light goes out).

4 Move the auxiliary/hitch selection lever to the hitch position **B**.

5 Raise the hitch by operating switch **Y**/**Z**. This will remove the load on locking lever **D**.

6 Pull up and hold release handle **A** to release locking lever **D**, and lower the hitch by operating switch **Y**/**Z**.



C111470

Fig 166.

⚠ WARNING

Ensure that no person is between the machine and trailer when the machine is reversing up to the trailer.

5-2-5-11

7 Engage the Trailer. The procedure for engaging the trailer to the tow hitch will depend on the type of trailer. In all cases observe the following precautions:

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a Ensure that the trailer and its draw bars are correctly positioned for engagement before the machine begins to approach it.

It is essential that the tow bar is parallel with the machine when the pickup hitch is raised and locked.

b If a helper is available to manoeuvre the trailer he should stand well clear of the machine until the tow hitch is correctly aligned with the trailer towing eye.

The helper should not approach the trailer or machine until the machine has been stopped, with the park brake engaged and the engine switched off.

c In certain conditions you may have to drive forward when closing the hitch to prevent the pickup hitch overriding the trailer towing hitch.

8 Operate **Y**/**Z** to raise the hitch. The locking lever will automatically spring back to the engaged position when the hitch is raised.

9 Once the trailer has been engaged, with locking lever **D** secured in position, the machine operator must not start the engine until the helper is clear of the machine and trailer.

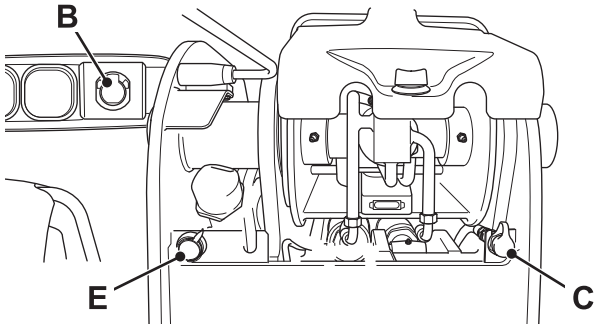
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Preparing the Trailer for Towing

Mechanical Tow Hitch Option

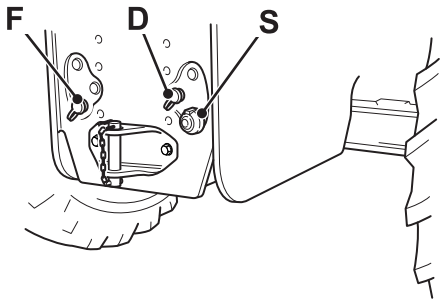
P5-2060

1 Connect the trailer lights into socket **B** (536-60) or **S** (other machines). Make sure that all the trailer lights and the direction indicator lights are working correctly and are visible by other road users.



420760-1

Fig 167. 536-60 Machines



263891-3

Fig 168. Other Machines

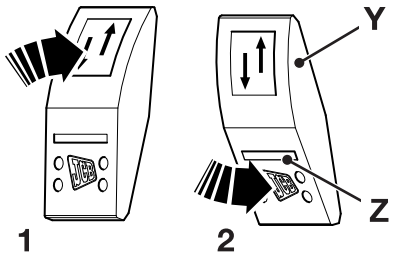
2 If an optional trailer brake valve is fitted, connect the trailer brakes into socket **C** (536-60) or **D** (other machines). Trailer braking is operated by the brake pedals.

Important: *Before you travel on the public highway check that the brakes work correctly and get used to the braking effect.*

3 Connect auxiliary hose to coupling **E** (536-60) or **F** (other machines).

4 To select the rear auxiliary circuit, set switch **Y** to position **1**. The switch light **Z** should be extinguished.

Note: *Make sure the Hitch/Auxiliary switch lamp is working, ie. set switch **Y** to position **2**.*



760951-1

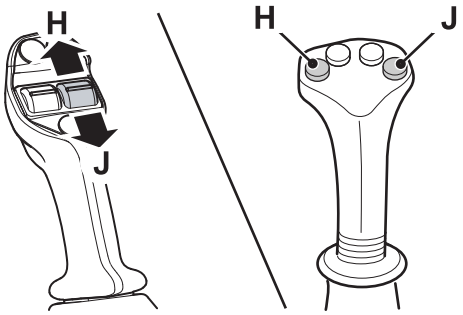
Fig 169.

⚠ WARNING

Do not use the rear auxiliary for trailer braking. If trailer brakes are required and the optional trailer brake valve is not fitted, first consult your JCB distributor.

0199

5 For auxiliary operation, ie. trailer tipping, operate **H**/**J** depending on the attachment fitted and the function required.



803001-2

Fig 170.

6 To prevent contamination of the machine hydraulics, when using a tipping trailer leave the trailer flat before disconnecting the hydraulic service to exhaust the trailer ram of oil.

7 Select 2-wheel steer if towing on Public Roads. Make sure the indicator shows that 2-wheel steer has engaged. Refer to ***Preparing for Road Travel***.

⚠ WARNING

Make sure the trailer hitch has correctly engaged and locked before driving off.

5-5-4-10

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Hydraulic Tow Hitch Option

All Machines (Excluding Agri Extra and 550/560-80 Models)

1 Connect the trailer lights into socket **C** (536-60) or **S** (other machines). Make sure that all the trailer lights and the direction indicator lights are working correctly and are visible by other road users.

⚠ WARNING

Do not use the rear auxiliary for trailer braking. If trailer brakes are required and the optional trailer brake valve is not fitted, first consult your JCB distributor.

0199

2 If an optional trailer brake valve is fitted, connect the trailer brakes into socket **D** (536-60) or **E** (other machines). Trailer braking is operated by the brake pedals.

Important: *Before you travel on the public highway check that the brakes work correctly and get used to the braking effect.*

3 To operate trailer auxiliary services:

Disconnect hydraulic hitch hose **F** from socket **G** and reconnect to stowage socket **H**. Connect trailer auxiliary hose to socket **G**. Set the trailer switch **Y** to position **1**, the switch light **Z** should be extinguished. Then operate **K**/**L** depending on the attachment fitted and the function required.

Before the hitch can be operated again connect the hoses in their original positions.

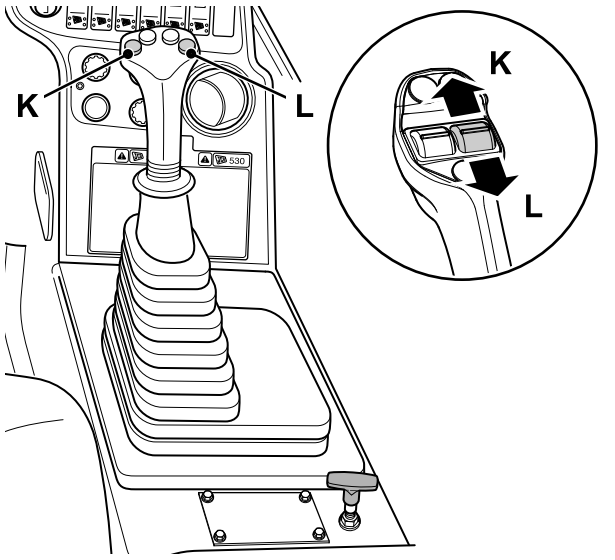
To prevent contamination of the machine hydraulics, close all rams on the attachment/trailer before disconnecting the hydraulic service to exhaust the trailer ram of oil.

4 Select 2-wheel steer if towing on Public Roads. Make sure the indicator shows that 2-wheel steer has engaged. Refer to ***Preparing for Road Travel***.

⚠ WARNING

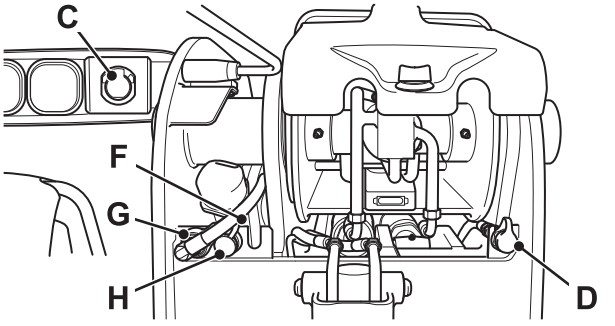
Make sure the trailer hitch has correctly engaged and locked before driving off.

5-5-4-10



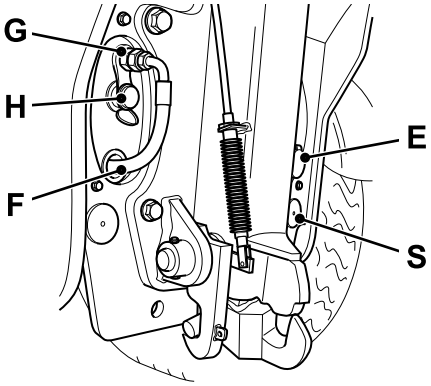
760041-2-C1

Fig 171.



715560-1

Fig 172. 536-60 Machines



263901-2-C2

Fig 173. Other Machines

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Agri Xtra Models

1 Connect the trailer lights into socket **C** (536-60) or **S** (other machines). Make sure that all the trailer lights and the direction indicator lights are working correctly and are visible by other road users.

⚠ WARNING

Do not use the rear auxiliary for trailer braking. If trailer brakes are required and the optional trailer brake valve is not fitted, first consult your JCB distributor.

0199

2 If an optional trailer brake valve is fitted, connect the trailer brakes into socket **D** (536-60) or **E** (other machines). Trailer braking is operated by the brake pedals.

Important: *Before you travel on the public highway check that the brakes work correctly and get used to the braking effect.*

Connect trailer auxiliary hose to socket **H**.

3 To operate trailer auxiliary services:

Set the trailer switch **Y** to position **1**, the switch light **Z** should be extinguished.

4 For trailer auxiliary operation operate **K**/**L** depending on the attachment fitted and the function required.

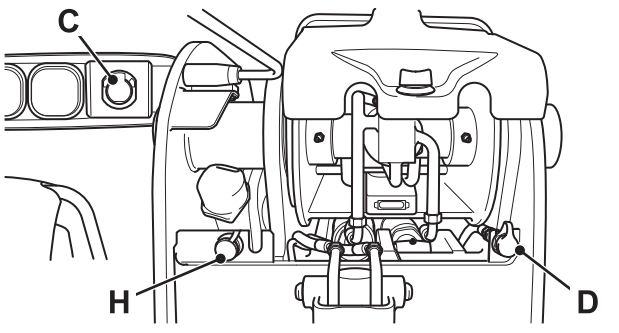
To prevent contamination of the machine hydraulics, close all rams on the attachment/trailer before connecting the hydraulic service to exhaust the trailer ram of oil.

5 Select 2-wheel steer if towing on Public Roads. Make sure the indicator shows that 2-wheel steer has engaged. Refer to ***Preparing for Road Travel***.

⚠ WARNING

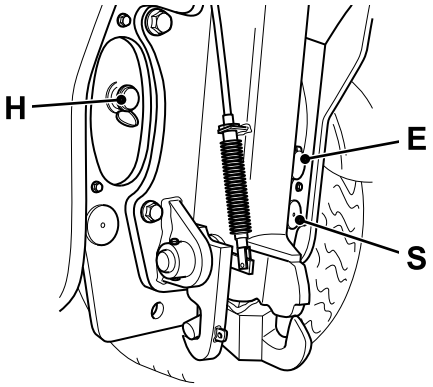
Make sure the trailer hitch has correctly engaged and locked before driving off.

5-5-4-10



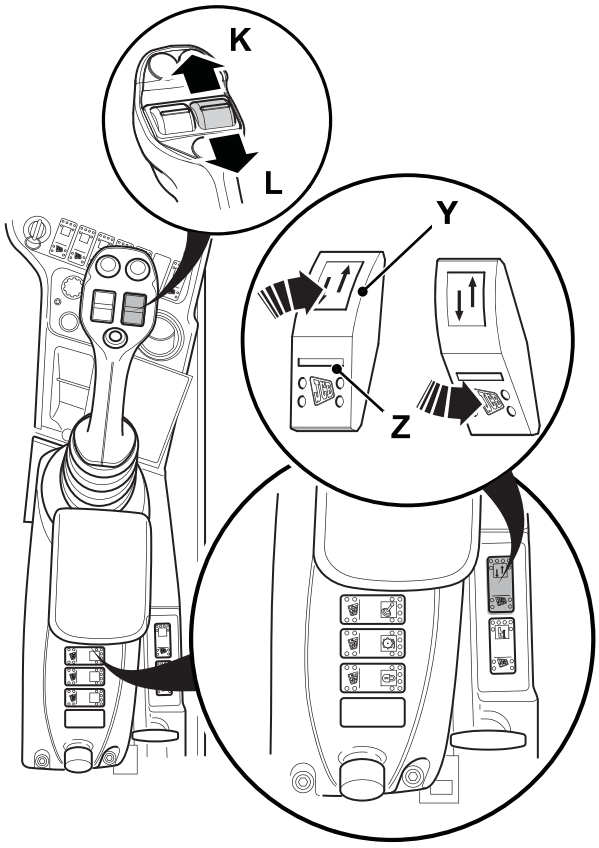
715560-1-C1

Fig 174. 536-60 Machines



263901-2-C1

Fig 175. Other Machines



T006800-4-C2

Fig 176.

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550/560-80 Models

1 Connect the trailer lights into socket **A**. Make sure that all the trailer lights and the direction indicator lights are working correctly and are visible by other road users.

⚠ WARNING

Do not use the rear auxiliary for trailer braking. If trailer brakes are required and the optional trailer brake valve is not fitted, first consult your JCB distributor.

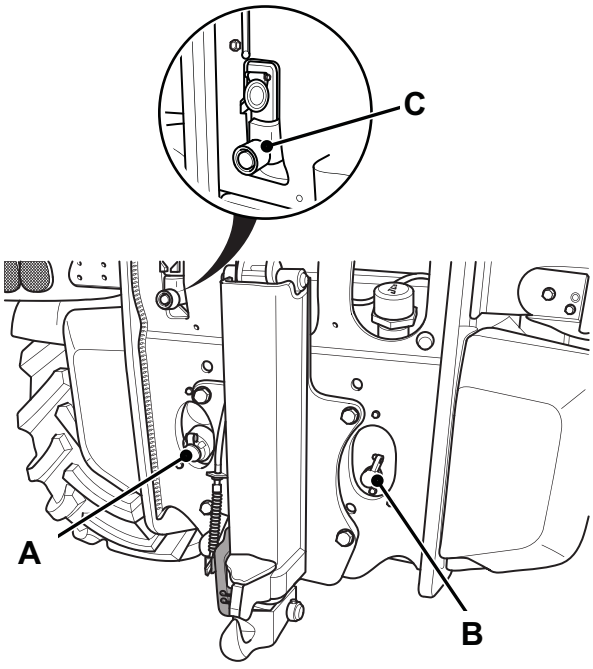
0199

2 Move the auxiliary/hitch selection lever to the auxiliary position **F**.

3 If an optional trailer brake valve is fitted, connect the trailer brakes into socket **B**. Trailer braking is operated by the brake pedals.

Important: *Before you travel on the public highway check that the brakes work correctly and get used to the braking effect.*

Connect trailer auxiliary hose to socket **C**.



C111470-C1

Fig 177.

4 For trailer auxiliary operation operate **D**/**E** depending on the attachment fitted and the function required.

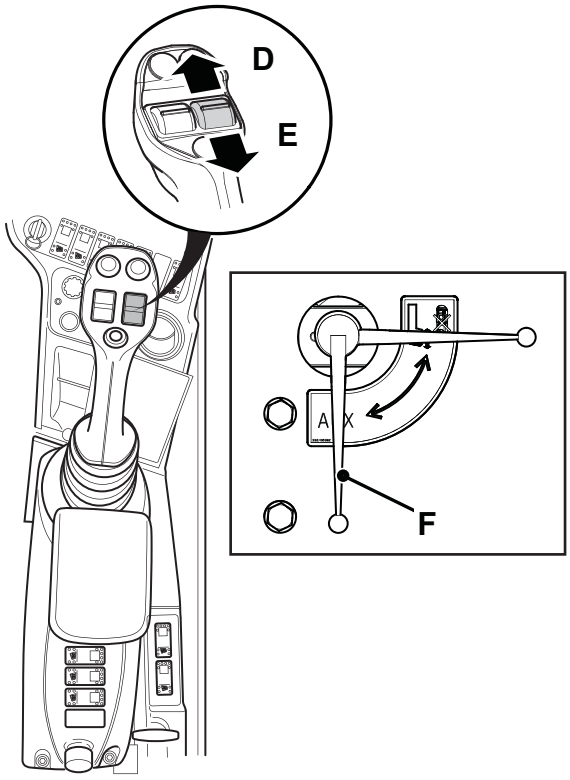
To prevent contamination of the machine hydraulics, close all rams on the attachment/trailer before connecting the hydraulic service to exhaust the trailer ram of oil.

5 Select 2-wheel steer if towing on Public Roads. Make sure the indicator shows that 2-wheel steer has engaged. Refer to ***Preparing for Road Travel***.

⚠ WARNING

Make sure the trailer hitch has correctly engaged and locked before driving off.

5-5-4-10



C111070-C1

Fig 178.

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Refuelling the Machine

Low Fuel Levels

If you operate the machine on very low fuel levels, then air can enter the fuel system. To prevent the entry of air, always add more fuel when the fuel gauge shows a low level of fuel.

If air enters the fuel system, the engine speed will vary dramatically and low power will be experienced. The symptoms may be made worse when the machine operates on steep gradients.

Note: *If you Increase the engine speed or load while there is air in the fuel system, then subsequent damage to the engine can occur.*

If the fuel supply contains air, you must stop the engine, fill the fuel tank then bleed the fuel system to remove the air. Refer to ***Routine Maintenance, Fuel System***.

Important: *You must bleed the fuel system after a fuel filter change.*

Filling the Tank

Important: *Before you add the fuel to the machine, refer to* ***Fluids, Lubricants and Capacities, Fuels****. If you use the incorrect type of fuel or fuel which is contaminated, then damage to the fuel injection system can occur.*

⚠ CAUTION

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

GEN-9-2

⚠ WARNING

Diesel Fuel

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

INT-3-2-2_1

⚠ WARNING

Petrol

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

INT-3-1-6

⚠ WARNING

Mobile Phones

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

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

INT-3-3-9

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⚠ CAUTION

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

Do not use fuel to clean the machine.

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

INT-2-2-12

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

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

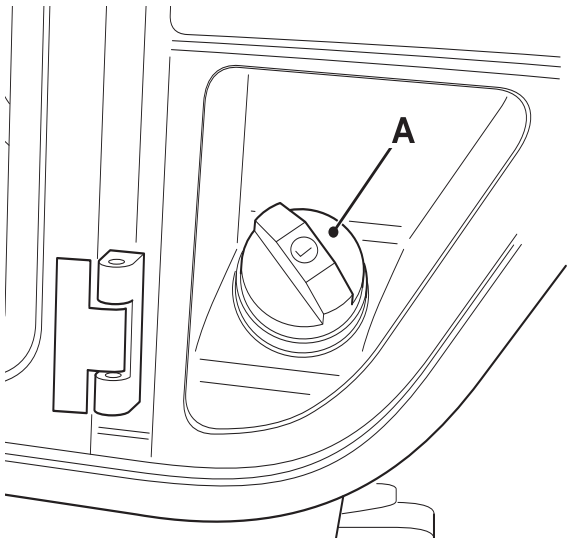
2 Remove all unwanted material from around the filler cap **A**.

3 Remove the filler cap.

4 Add the fuel through the filler neck, as necessary.

5 Install the filler cap.

Note: *We recommend that you lock the filler cap to prevent theft and tampering.*



263590-1

Fig 179.

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Moving a Disabled Machine

Do not tow a machine unless there is no alternative. Remember that further damage might be caused to the machine by towing it. If at all possible repair the machine where it stands. If the machine must be towed read the following ***CAUTIONS*** and ***WARNINGS*** and use the procedure given here.

⚠ CAUTION

Towing a machine too far or too fast can damage the transmission. Do not tow the machine further than one mile. Use a trailer for greater distances. When towing do not travel faster than 15 mph (25 km/h).

Use a rigid draw-bar. If a towing chain must be used, then use two towing vehicles. One towing vehicle should be coupled to the front of the disabled machine. The other towing vehicle should be coupled to the rear of the disabled machine, to provide braking power.

The towing vehicle(s) must have enough pulling and braking power to move and stop the machine.

2-2-7-3-2

1 Engage the park brake.

2 Set the transmission to the neutral position.

3 Prepare the machine for travel. See ***Preparing for Road Travel***.

If the engine cannot be run, the boom may have to be hoisted into the transport position and secured. The procedure for doing this will depend on the machine's condition and its hydraulic circuits.

For this reason you should contact your JCB Distributor for help and advice before attempting this work.

4 Attach the drawbar to a suitable location.

5 The machine is now ready for towing. Make sure you understand what the towing driver will be doing. Obey his instructions and all relevant regulations.

Also note that if the engine cannot be started, the effort required to steer the machine is greatly increased.

Recovery Hitch

P5-2023_2

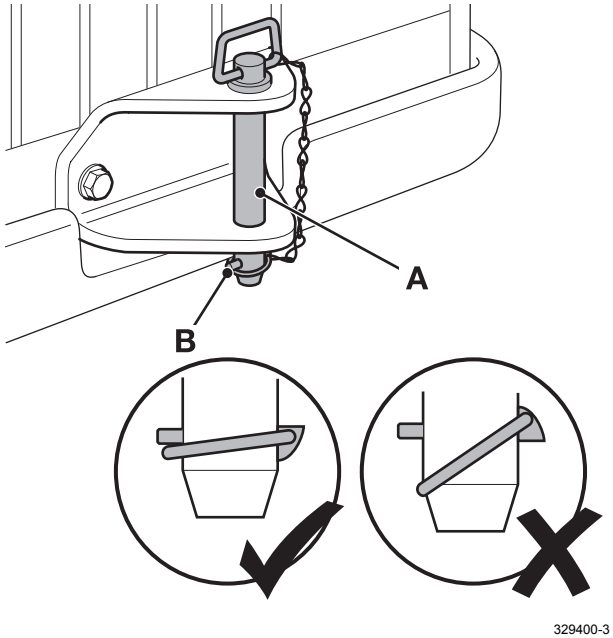
⚠ WARNING

Using the recovery hitch for towing may exceed the capability of the recovery hitch. This could damage or weaken the recovery hitch or pin which can result in the trailer becoming detached from the machine.

2-2-4-10

The recovery hitch is only suitable for occasional off-highway towing with a maximum gross trailer weight of 1000kg (2204lbs). It is not approved as a permanent towing hitch. Make sure you will be obeying all pertinent laws and regulations before towing.

Fit pin **A** and secure in position with locking ring **B**.



329400-3

Fig 180. Typical Installation

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Transporting the Machine

⚠ WARNING

The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachments or parts that may move during transit must be adequately secured.

5-2-5-9

Note: *Before transporting the machine make sure you will be obeying the rules and laws of all the areas that the machine will be carried through.*

Make sure that the transporting vehicle is suitable. See ***Static Dimensions*** (SPECIFICATIONS section) for the dimensions of your machine.

⚠ WARNING

Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tyres. Make sure the machine will not foul on the ramp angle. See Static Dimensions in SPECIFICATION section for the minimum ground clearance of your machine.

2-2-7-5_1

1 Place blocks at the front and rear of the trailer wheels.

2 Move the machine onto the trailer.

- **a** Make sure the ramps are correctly in place and secure.
- **b** Set the boom. Refer to ***Preparing for Road Travel***.
- **c** Carefully drive the machine onto the trailer.
- **d** Make the machine safe with the boom lowered. Refer to ***How to Make the Machine Safe (Boom Lowered)***.

Important: *Put blocks at the front and rear of all four tyres.*

- **e** Check that the overall height of the load is within regulations. Adjust if necessary.
- **f** Secure the cab.
- **g** Cover the exhaust stack.

3 Anchor the machine to the trailer with chains.

Note: *Look for the instructional label **A** to identify the correct tie-down points.*

4 Measure the maximum height of the machine from the ground. Make sure the truck driver knows the clearance height before he drives away.

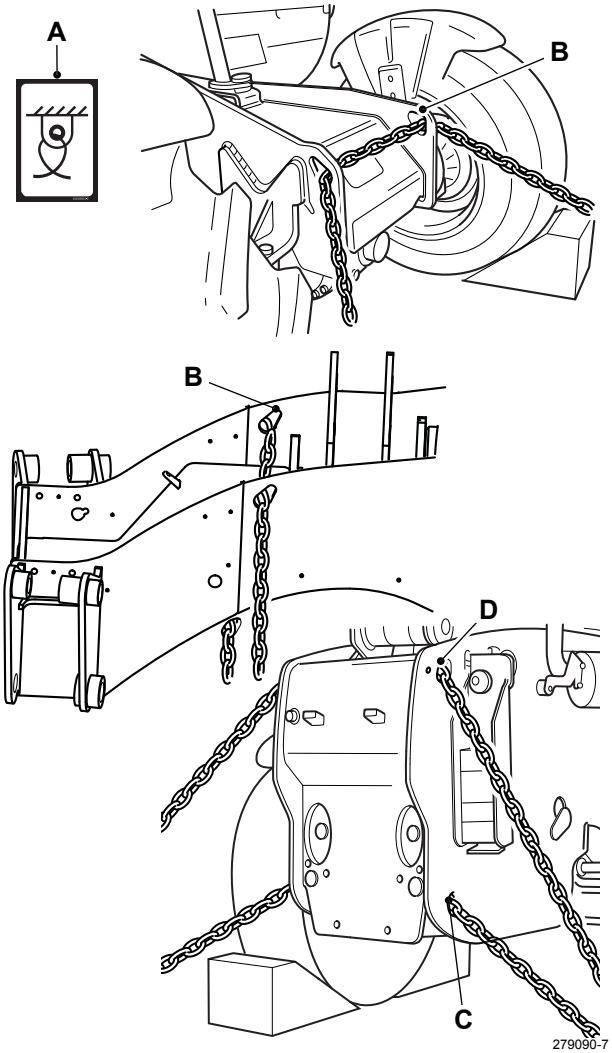


Fig 181.

Table 11. Anchor Point Positions

Position (Model)	Anchor Point
Front (All Models)	**B**
Rear (531-70, 533-105, 535-95, 536-60, 535-125 HiViz, 535-140 HiViz, 540-140 HiViz, 536-70, 541-70, 550/560-80)	**C**
Rear (540-140, 540-170, 540-200)	**D**

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Lifting a Machine

Carry out the following procedure when lifting a machine:

1 Remove all attachments.

2 Make the machine safe with the boom lowered. Refer to ***How to Make the Machine Safe (Boom Lowered)***.

3 Remove all loose equipment from machine exterior.

4 Check the unladen weight of the machine. Refer to See ***Static Dimensions*** (SPECIFICATIONS section).

⚠ WARNING

Lifting Equipment

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

INT-1-3-7

5 Attach lifting equipment to lifting points as shown.

Note: *Look for instructional label **A** to identify the correct lifting points.*

6 Take the weight of the machine. If the lifting equipment is fouling on the machine use spreader bars to prevent damage.

7 Check that the lifting eye is positioned directly above the machine centre of gravity.

⚠ DANGER

Do not stand underneath the raised load during the lowering procedure. Stand clear and to one side until the load has been safely lowered. Make sure that the area is clear of other people before lowering the load. If you do not follow these precautions you or others could be killed or seriously injured.

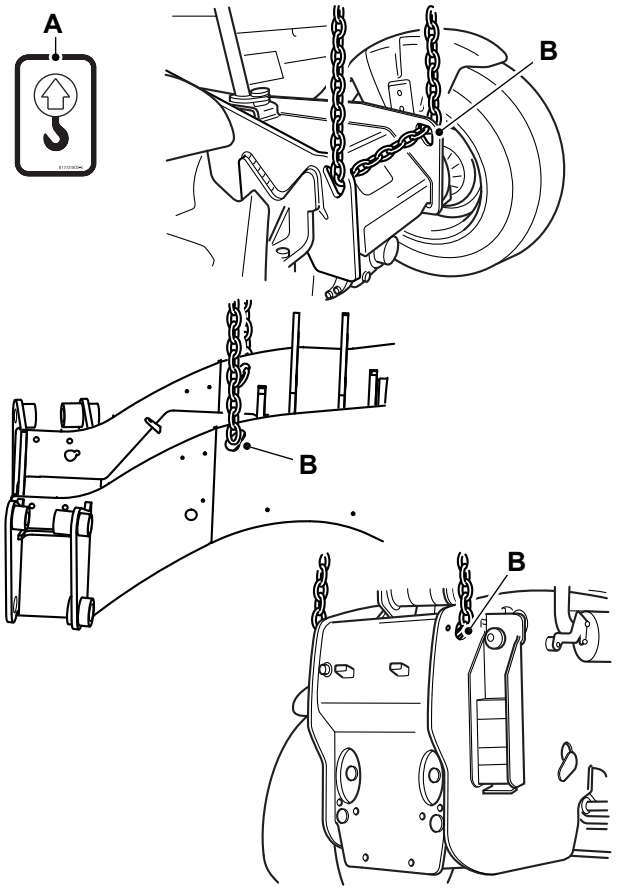
2-3-5-3

⚠ WARNING

Communications

Bad communications can cause accidents. Keep people around you informed of what you will be doing. If you will be working with other people, make sure any hand signals that may be used are understood by everybody. Work sites can be noisy, do not rely on spoken commands.

INT-2-2-3



279100-8

Fig 182. Excluding 550/560-80 Machines

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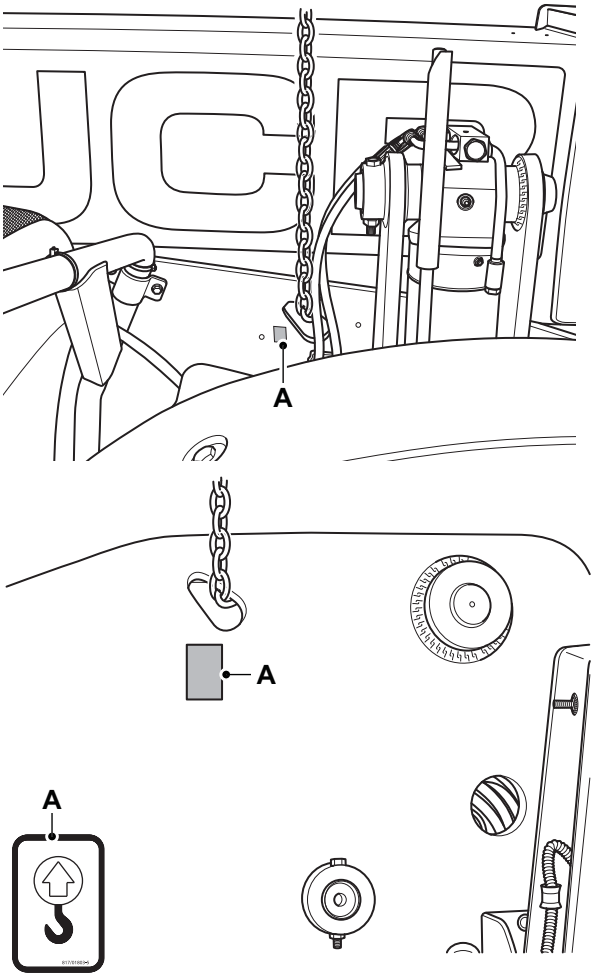


Fig 183. 550/560-80 Machines

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Storage of the Machine

Introduction

T2-074

If you will not use the machine for an extended period, you must store the machine correctly. If you prepare the machine carefully and apply on-going care you can prevent deterioration and damage to the machine while it is in storage.

Note: *JCB Dealers must check stock monthly.*

Storage Area

The machine can be stored in a temperature range of:

-40°C to 54°C (-40°F to 129°F).

When possible, you must keep the machine in a dry building or shelter.

If only an outdoor storage area is available, look for a storage area with good drainage.

If the machine is to be out of use for an extended period, careful preparation and on-going care will minimise the possibility of deterioration and damage while in storage.

Prepare the Machine for Storage

T2-076

1 Clean the machine to remove all unwanted material and corrosive products.

Dry the machine to remove solvents and moisture.

2 Apply grease to the moving parts. Refer to ***Greasing the Machine***.

3 Examine the machine for worn or damaged parts. Replace if necessary.

4 Fill the fuel tank to prevent a build up of condensation in the tank.

5 Examine the coolant condition. Replace if necessary.

6 Examine all fluid levels. Top up if necessary.

Put the Machine into Storage

T2-077

1 Park the machine on level, solid ground.

Park the machine in a position where the machine is easy to get access (in case the machine does not start at the end of the storage period).

Place suitable timbers under the machine to eliminate direct contact with the ground.

2 Retract all rams and lower the attachments to the ground.

3 Vent the hydraulic system.

4 Remove the starter key.

5 Apply a thin layer of grease or petroleum jelly to all exposed ram piston rods.

6 Remove the battery. Charge the battery.

Keep the battery in warm, dry conditions. Charge the battery periodically.

7 If you keep the machine outdoors, cover the machine with tarpaulins or plastic sheets.

During Storage

T2-078

Operate the machine functions each week to prevent a build up of rust in the engine and hydraulic circuits, and to minimise deterioration of the hydraulic seals.

1 Clean the machine to remove all unwanted material and corrosives.

Remove the grease or petroleum jelly from the ram piston rods.

2 Install a charged battery.

3 Examine all fluid levels. Top up if necessary.

4 Start the engine.

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5 Operate the hydraulic controls.

Make sure that the hydraulic functions operate correctly.

6 Prepare the machine for storage. Refer to ***Put the Machine into Storage***.

Take the Machine Out of Storage

T2-079

1 Examine the coolant condition. Replace If necessary

2 Examine all fluid levels. Top up if necessary.

3 Clean the machine to remove unwanted material and corrosives.

Remove the grease or petroleum jelly from the ram piston rods.

4 Install a charged battery.

5 Start the engine.

6 Operate the hydraulic controls.

Make sure that the hydraulic functions operate correctly.

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Routine Maintenance

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

T3-005_2

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.

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Health and Safety

Lubricants

T3-060_3

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.

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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 with 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

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Battery

T3-061

⚠ WARNING

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

Battery electrolyte contains sulphuric acid. It can burn you if it touches your skin or eyes. Wear personal protective equipment (PPE). 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_2

⚠ 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 personal protective equipment (PPE).

INT-3-2-1_4

⚠ 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 an approved battery tester.

INT-3-1-8_2

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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.

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Service Schedules

Introduction

T3-036_3

⚠ 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

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.

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. When there is no hourmeter fitted, use the calendar equivalents to determine the service intervals. Refer to ***Calendar Equivalents***. 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_4

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****.*

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

Pre-start Cold Checks, Service Points and Fluid Levels

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

795390-1

Calendar Equivalents

T3-037

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Every 8000 Hours = 8 Years

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Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	100(1)	500	1000	2000	8000
ENGINE								
Coolant Quality and Level	- Check	☐	☐	☐	☐	☐		
Cooling System	- Drain and Refill						☐	☐
Oil level	- Check	☐	☐					
Oil and Filter(2)(3)(4)	- Change				☐	☐	☐	☐
Air Cleaner Dust Valve(5)	- Clean				☐	☐	☐	☐
Air Cleaner Outer Element(5)	- Change					☐	☐	☐
Air Cleaner Inner Element	- Change						☐	☐
Pre-Cleaner (if fitted)	- Check			☐				
Water Separator	- Check for contamination and Drain		☐	☐	☐	☐	☐	☐
Water Separator Fuel Filter(6)	- Change				☐	☐	☐	☐
Engine Fuel Filter(6)	- Change					☐	☐	☐
Front End Accessory Drive (FEAD) Belt Condition	- Check				☐	☐	☐	☐
Front End Accessory Drive (FEAD) Belt	- Change							☐
Powertrain Mounting Bolts for Tightness	- Check			☐	☐	☐	☐	☐
All Hoses - Condition	- Check			☐	☐	☐	☐	☐
Radiator(5)	- Clean				☐	☐	☐	☐
Crankcase Ventilation Filter (if fitted)	- Change					☐	☐	☐
Valve Clearances(7)	- Check and Adjust						☐	☐
Oil Filler and Dipstick Seals	- Change						☐	☐
Injectors(7)	- Change							☐
Injector(s) Leak Off Rail(7)	- Change							☐
High Pressure Fuel Lines(7)	- Change							☐
TRANSMISSION, AXLES AND STEERING								
Transmission Mount Security	- Check			☐				
Transmission Oil Level	- Check	☐	☐	☐	☐			
Transmission Oil(8)	- Change					☐	☐	☐
Transmission Oil Filter	- Change			☐	☐	☐	☐	☐
Axle Mount Security	- Check			☐				

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	Operation	10	50	100[1]	500	1000	2000	8000
Axle(s) Oil Level	- Check		☐	☐				
Axle(s) Oil (550/560-80 machines)	- Change			☐	☐	☐	☐	☐
Axle(s) Oil (Other machines)	- Change				☐	☐	☐	☐
Hub Oil Level (Without Oil Immersed Brakes)	- Check			☐				
Hub Oil (550/560-80 machines)	- Change			☐	☐	☐	☐	☐
Hub Oil (Other machines without Oil Immersed Brakes)[9]	- Change					☐	☐	☐
Hub Oil (Other machines with Oil Immersed Brakes)[9]	- Change			☐	☐	☐	☐	☐
Axle Breather(s)	- Check			☐	☐	☐	☐	☐
Steering Stops (if fitted)	- Security			☐	☐	☐	☐	☐
Wheel Nut Security	- Check	☐	☐	☐	☐	☐	☐	☐
Tyre Pressures/Condition	- Check	☐	☐	☐	☐	☐	☐	☐
Wheel Alignment	- Check	☐	☐	☐	☐	☐	☐	☐
Transmission Strainer	- Clean					☐	☐	☐
Drive Shafts and Universal Joints[10]	- Security and Grease			☐	☐	☐	☐	☐
Axle Pivots and Linkages[10]	- Grease		☐	☐	☐	☐	☐	☐
HYDRAULICS								
Oil Level	- Check		☐	☐	☐	☐		
Oil[7]	- Sample, Change						☐	☐
Oil Filter (Canister Type)	- Change			☐	☐	☐	☐	☐
Oil Filter (Hydraulic Oil Tank)[11]	- Change						☐	☐
OIl Filter (Hydraulic Oil Tank, Top Mounting)	- Change			☐	☐	☐	☐	☐
Suction Strainer	- Clean						☐	☐
Pilot Filter (Canister Type)[12]	- Change			☐	☐	☐	☐	☐
Pilot Filter (Valve Mounted Type)[13]	- Change						☐	☐
BRAKES								
Brake System Fluid Level[14]	- Check	☐	☐	☐	☐	☐		
Brake System Fluid[14]	- Change						☐	☐

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Operation		10	50	100(1)	500	1000	2000	8000
ELECTRICS								
Battery Electrolyte Level (if applicable)	- Check				☐	☐	☐	☐
Battery Terminals for Condition and Tightness	- Check			☐	☐	☐	☐	☐
BODYWORK AND CAB								
Lift/Displacement/Tilt/Steer Ram Pivot Pins	- Grease		☐		☐	☐	☐	☐
Extension Ram Piston Rod Pivot Pin	- Grease					☐	☐	☐
Pivot Pins (Excluding 550/560-80 tilt link pivots)	- Grease		☐	☐	☐	☐	☐	☐
550/560-80 tilt link Pivot Pins	- Grease				☐	☐	☐	☐
Fire Extinguisher (if fitted)	- Check	☐	☐		☐	☐	☐	☐
Wing Mirrors Condition and Security	- Check	☐	☐		☐	☐	☐	☐
ROPS/FOPS Structure	- Check	☐	☐	☐	☐	☐	☐	☐
Doors and Hinges	- Lubricate			☐	☐	☐	☐	☐
Control Lever Linkages (If applicable)	- Lubricate			☐	☐	☐	☐	☐
Windscreen Washer Fluid Level	- Check	☐	☐	☐	☐	☐	☐	☐
Cab Heater Fresh Air Filter (if fitted)	- Change				☐	☐	☐	☐
BOOM								
Boom Wear Pad Runways	- Waxoyl				☐	☐	☐	☐
Inner Boom Hoses(15)	- Grease				☐	☐	☐	☐
Inner Boom Chains	- Oil				☐	☐	☐	☐
Boom Wear Pad Clearance (16)	- Check/Adjust				☐	☐	☐	☐
Boom Wear Pad Condition and Security (Replace if required)(16)	- 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		☐		☐	☐	☐	☐

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	Operation	10	50	100(1)	500	1000	2000	8000
REGISTRATION/CERTIFICATION								
SWL Stickers (UK) and Flip Chart	- Renew as Required	☐	☐	☐	☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) If operating under arduous conditions, do an engine oil flush (use the normal recommended engine oil) every 250 hours. Change the engine oil and filter every 250 hours.
(3) The oil service interval will be affected if there is a high sulphur content in the fuel. Refer to Fuel System for more information.
(4) When the engine is operated with 20% biodiesel change the engine oil and filter every 250 hours. Refer to Fuel System for more information.
(5) More frequently if operating in dusty working environments.
(6) If the engine is difficult to start or the engine has poor performance, fit new filters.
(7) Jobs which should only be done by a specialist.
(8) After a major transmission repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil and filter after a further 100 hours if the oil was heavily contaminated because of, or from the failure (e.g. water contamination).
(9) After a hub repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil after a further 100 hours to remove any bedding-in wear. This is particularly important if new brake plates have been fitted.
(10) The axles and driveshafts are factory greased with a high performance grease, if during service a standard grease is used, then the interval must be reduced to every 50 hours, contact your JCB Distributor for advice.
(11) Agri, Agri Plus, Agri Super and Agri Xtra models only.
(12) Agri Xtra models only.
(13) Agri, Agri Plus, Agri Super models and 540-170 only.
(14) Not applicable to 550/560-80 machines.
(15) Not applicable to 540-200 machines.
(16) If operating under arduous conditions, check the boom wear pads every 250 hours.

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Functional Test and Final Inspection

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

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	Operation	10	50	100[1]	500	1000	2000	8000
Chassis Levelling (Sway) Cut-out (if fitted)[2]	- Check			☐	☐	☐	☐	☐
BRAKES								
Foot Brake - Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Park Brake	- Check/Adjust	☐	☐	☐	☐	☐	☐	☐
ELECTRICS								
Alternator - Output[2]	- Check			☐	☐	☐	☐	☐
All Electrical Equipment Operation, (warning lights, beacon, alarms, horn, wipers etc.)	- Check	☐	☐	☐	☐	☐	☐	☐
Longitudinal Load Moment Indicator	- Check	☐	☐	☐	☐	☐	☐	☐
LLMC/LC4 System (if fitted)	- Check	☐	☐	☐	☐	☐	☐	☐
Stabiliser Indicators (if fitted)	- 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	☐	☐	☐	☐	☐	☐	☐
BOOM CHAIN SERVICING								
Boom Chains	- Oil		☐	☐	☐	☐	☐	☐
Boom Chains - Tension[4]	- Check/Adjust		☐	☐	☐	☐	☐	☐
Boom Chains - Wear and Defects[2][5][6]	- Check					☐	☐	☐
Boom Roller - Wear	- Check		☐	☐	☐	☐	☐	☐
Boom Roller Pivot Pin (with grease point, if fitted)	- Grease				☐	☐	☐	☐
Ram Roller (replace if necessary)	- Check		☐	☐	☐	☐	☐	☐

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Operation	10	50	100(1)	500	1000	2000	8000
LIFTING EQUIPMENT							
Fit for Purpose Test(5) - Check				☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) Jobs which should only be done by a specialist.
(3) 550/560-80 machines only.
(4) If chains require adjusting contact your JCB Distributor.
(5) This may be required every six months or at least annually in some countries to meet and comply with legislation and for insurance purposes.
(6) If operating under arduous conditions, complete this operation every 250 hours.

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Fluids, Lubricants and Capacities

Table 12.

ITEM	CAPACITY Litres (UK Gal)	FLUID/LUBRICANT	JCB Part Number	Container Size(1)
Fuel Tank	146 (32.1)	Diesel Oil (Refer to Fuels)	-	-
Engine (Oil)(2)		JCB Engine Oil EP 15W40	4001/1805	20 litres
- MIN	12.5 (2.75)	-10°C to +50°C (14°F to 122°F)		
- MAX	15 (3.3)	JCB Cold Climate Engine Oil EP 5W40	4001/2705	20 litres
		-20°C to +50°C (-4°F to 122°F)		
Engine (Coolant)(3)	22 (4.4)	JCB Antifreeze HP/Coolant + Water (Refer to ***Coolant Mixtures***)	4006/1120	20 litres
Transmission Machines with SE type engine and 4-speed gearbox only.		JCB Transmission Fluid EP 10W(4) -32ºC to 40ºC (-25ºF to 104ºF)	4000/2505	20 litres
- Wet fill	17 (3.7)	JCB Transmission Fluid EP SAE 30	4000/2605	20 litres
- Dry fill	19 (4.2)	-5ºC to 46ºC (23ºF to 115ºF)		
Transmission All other machines		JCB Transmission Fluid EP 10W -32ºC to 40ºC (-25ºF to 104ºF)	4000/2505	20 litres
- Wet fill	21 (4.6)	JCB Transmission Fluid EP SAE 30	4000/2605	20 litres
- Dry fill	23 (5.0)	-5ºC to 46ºC (23ºF to 115ºF)		
Front Axle Housing				
550/560-80	14.5 (3.2)	JCB Gear Oil LS Plus	4000/3905	20 litres
Other machines	17.7 (4.7)	JCB Gear Oil HP Plus	4000/2205(5)	20 litres
Hubs (x2)				
550/560-80 machines	1.9 (0.42)	JCB Gear Oil LS Plus	4000/3905	20 litres
Other machines	1.9 (0.42)	JCB Gear Oil HP Plus	4000/2205(6)	20 litres
Rear Axle Housing				
531-70, 533-105, 535-95, 536-60, 536-70, 541-70	10 (2.2)	JCB Gear Oil HP Plus	4000/2205(5)	20 litres
540-140, 540-170, 540-200	19 (4.2)	JCB Gear Oil HP Plus	4000/2205(5)	20 litres
535-125 HiViz, 535-140 HiViz, 540-140 HiViz	17.7 (3.9)	JCB Gear Oil HP Plus	4000/2205(5)	20 litres
550/560-80 Hubs (x2)	13.5 (3.0)	JCB Gear Oil LS Plus	4000/3905	20 litres

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ITEM	CAPACITY	FLUID/LUBRICANT	JCB Part Number	Container Size(1)
	Litres (UK Gal)			
550/560-80 machines	1.9 (0.42)	JCB Gear Oil LS Plus	4000/3905	20 litres
Other machines	2 (0.43)	JCB Gear Oil HP Plus	4000/2205(7)	20 litres
Brake System(8)		JCB Hydraulic Fluid HP15(9)	4002/0503	5 Litres
Hydraulic Tank(10)		JCB Hydraulic Fluid HP		
		- Above 100 °F, 38 °C	4002/0805	20 Litres
		- Below 100 °F, 38 °C	4002/1025	20 Litres
531-70, 536-70, 541-70	115 (25.3)			
533-105, 535-95	125 (27.4)			
536-60	113 (24.8)			
540-140	131 (28.8)			
535-125 HiViz, 535-140 HiViz, 540-140 HiViz	127 (27.9)			
540-170, 540-200	180 (39)			
550/560-80	112 (24.6)	JCB Optimum Performance Hydraulic Fluid	4002/2005	20 Litres
Grease Points		JCB Special HP Grease(11)	4003/2017	400g
		JCB Special MPL-EP Grease(11)	4003/1501	400g
Wear Pad Runways		JCB Waxoyl	4004/0502	5 litres
Boom Hoses		JCB Special HP Grease (Blue)	4003/2017	400g
Boom Chain		JCB Chain Lubricant	4004/0237A	300ml

(1) For information about the different container sizes that are available (and their part numbers), contact your JCB Dealer.
(2) Do not use ordinary engine oil
(3) 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.
(4) Friction modified oils must not be used (eg Dexron ATF type).
(5) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
(6) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
(7) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
(8) Excluding 550/560-80 machines
(9) CAUTION: Do not use ordinary brake fluid.
(10) 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.
(11) 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.

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Coolant Mixtures

T3-009_3

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

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

⚠ WARNING

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

7-3-4-4_1

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

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

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

50% Concentration (Standard)

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

60% Concentration (Extreme Conditions Only)

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

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

If you use any other brand of antifreeze:

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

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Fuels

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.*

⚠ CAUTION

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

GEN-9-2

Table 13.

Fuel Specification	Applicable Engines	Service Requirements
EN590 Diesel fuel types - Auto/C0/C1/C2/C3/C4	All Dieselmax 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 Dieselmax engines. ***Important:*** *Engines operated with these fuels may have a reduced service life.*	Obey the usual routine maintenance schedules and procedures. Fuel additives are recommended for use with low sulphur fuels. ⇨ ***Additives (199)***.
MIL T38219 XF63		
NATO F63		
French EN590 (RME5) with 5% maximum		
AVTURFSII, NATO F34, JP8, MIL T83133, DERD 2463, DEF STAN 91-87	All Dieselmax engines. ***Important:*** *Engines operated with these fuels may have a reduced service life.*	Obey the usual routine maintenance schedules and procedures. Fuel additives must be used. ⇨ ***Additives (199)***.
AVCAT FSII, NATO F44, JP5, MIL T5624, DERD 2452, AVTOR		
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	Dieselmax engines manufactured from 2007 on only(1).	You must obey special routine maintenance schedules and procedures. ⇨ ***Warranty (199)***.
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.

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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 mico-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 (199)***.

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.

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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 14. Sulphur Content (200)*.

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 14. 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.

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Prepare the Machine for Maintenance

Introduction

⚠ 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.

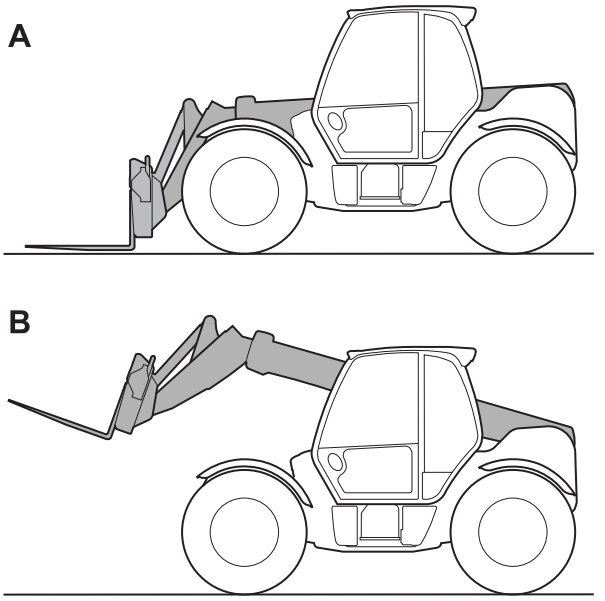
8-3-1-1

Make the machine safe before you start a maintenance procedure.

You can complete most of the maintenance procedures with the boom lowered (Position **A**). Unless a maintenance procedure instructs you differently, you must lower the boom. Refer to ***How to Make the Machine Safe (Boom Lowered)***.

If you lift the boom to get access for maintenance (Position **B**), you must install the maintenance strut on the boom. Refer to ***How to Make the Machine Safe (Boom Lifted)***.

Important: *Until the hydraulic pressure is fully released on 550/560-80 and 540-200 machines the boom lower and retract service are still operative when the engine is not running. Make sure that the boom is lowered or supported fully on the safety strut.*



T015850-1

Fig 184.

How to Make the Machine Safe (Boom Lowered)

Important: *You can complete most of the maintenance procedures with the boom lowered. Unless a maintenance procedure instructs you differently, you must lower the boom.*

1 Park the machine on level, solid ground.

If necessary, refer to ***Stopping and Parking the Machine*** in the Operator Manual.

2 Retract then lower the boom.

3 Put the attachment flat on the ground.

4 Stop the engine and remove the starter key.

5 Disconnect the battery to prevent accidental operation of the engine.

6 If necessary, put chocks against the two sides of the wheels before you get below the machine.

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How to Make the Machine Safe (Boom Lifted)

⚠ WARNING

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

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

5-3-1-2_2

⚠ CAUTION

You will have to climb onto the machine to fit or remove the strut. Take care, especially if the machine is wet. Remove mud and oil before climbing onto the machine. Do not use the exhaust as a handhold. It can burn you.

5-3-1-4_1

Note: *If you lift the boom to get access for maintenance, you must install the maintenance strut on the boom.*

Installing the Maintenance Strut

Before fitting the maintenance strut remove any load on the forks and empty buckets or attachments.

1 Park the machine on level, solid ground.

If necessary, refer to ***Stopping and Parking the Machine*** in the Operator Manual.

2 Fully retract the boom (unless it needs to be extended for maintenance). Raise the boom just far enough to install the strut.

3 Stop the engine and remove the starter key.

For 550/560-80 machines DO NOT remove the starter key. Stop the engine, then turn the starter switch to position 1. ⇨ *Starter Switch (65)*.

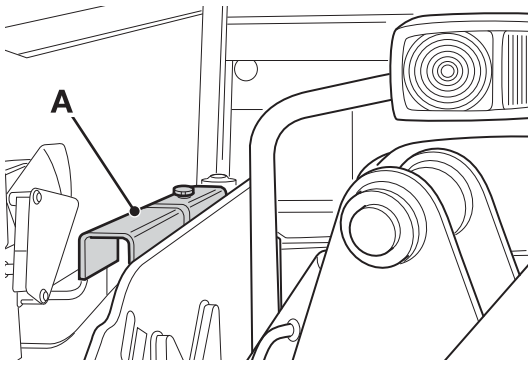
4 Remove the strut **A** from its stowage position.

The stowage position for the boom safety strut can vary with machine. ⇨ *Table 15. (202)*.

Table 15.

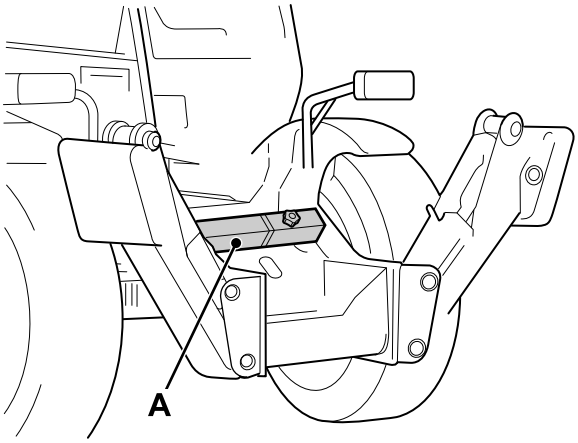
Model	Stowage Position
531-70, 533-105, 535-95, 536-60, 536-70, 541-70, 550/560-80	⇨ *Fig 185. (203)*
540-140, 540-170	⇨ *Fig 186. (203)*
535-125 HiViz, 535-140 HiViz, 540-140 HiViz	⇨ *Fig 187. (203)*
540-200	⇨ *Fig 189. (203)*

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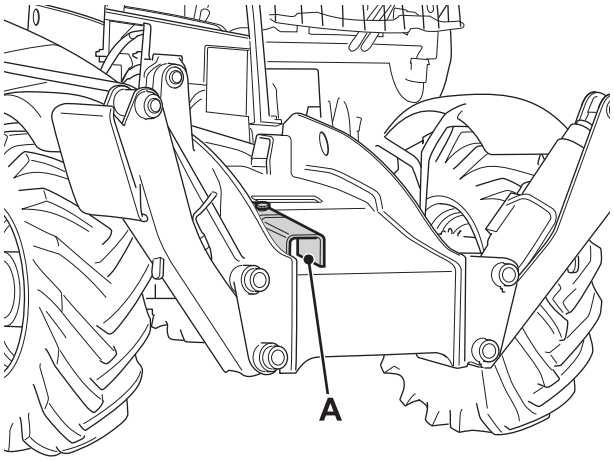
266520-B1

Fig 185.



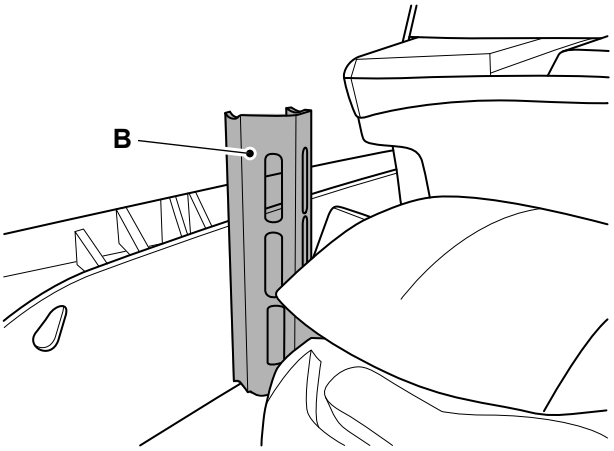
807540-1

Fig 186.



T012120-2

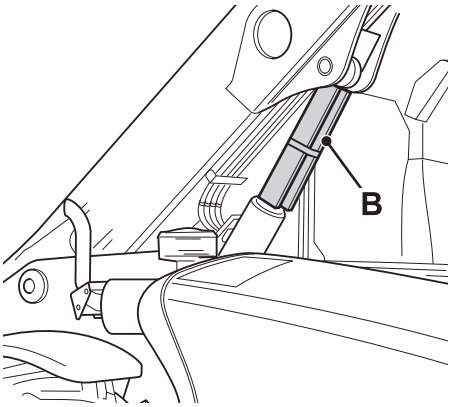
Fig 187.



T068010

Fig 188.

5 Place the strut **A** around the lift ram piston rod. ⇒ *Fig 188. (203)*. Secure it in position.



263560-B1

Fig 189.

6 To prevent any chance of the boom creeping down and trapping your fingers, the boom should be lowered onto the strut.

For 550/560-80 and 540-200 machines, once the boom has been lowered onto the strut turn the starter switch to position 0 and remove the starter key. ⇒ *Starter Switch (65)*.

Note: *Lower the boom carefully, to prevent possible damage to the strut. Stop as soon as the weight of the boom is on the strut.*

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7 Disconnect the battery to prevent accidental operation of the engine.

8 If necessary, put chocks against the two sides of the wheels before you get below the machine.

Removing the Maintenance Strut

1 Park the machine on level, solid ground.

If necessary, refer to ***Stopping and Parking the Machine*** in the Operator Manual.

2 Raise the boom to take the weight off of the strut.

3 Stop the engine and remove the starter key.

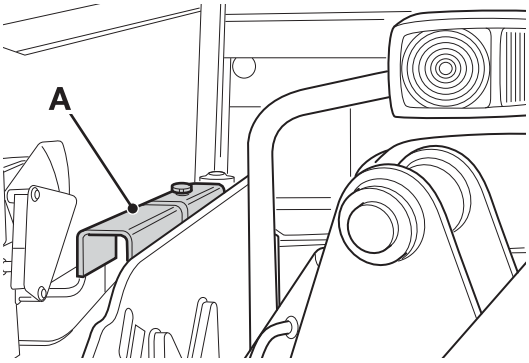
4 Remove the strut.

5 Secure the strut in its stowage position **A**.

The stowage position for the boom safety strut can vary with machine. ⇒ *Table 16. (204)*.

Table 16.

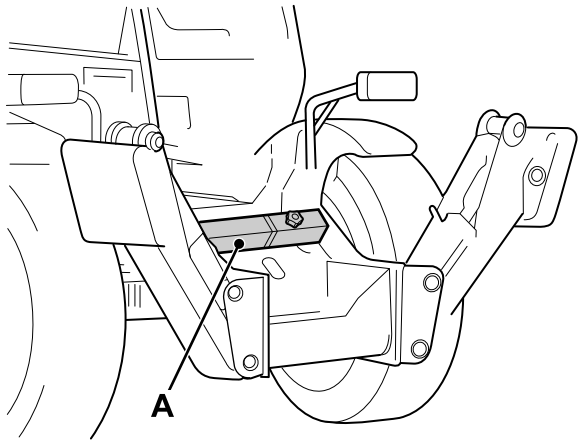
Model	Stowage Position
531-70, 535-95, 536-60, 536-70, 541-70, 550/560-80	⇒ *Fig 190. (204)*
540-140, 540-170	⇒ *Fig 191. (205)*
535-125 HiViz, 535-140 HiViz, 540-140 HiViz	⇒ *Fig 192. (205)*
540-200	⇒ *Fig 193. (205)*



266520-B1

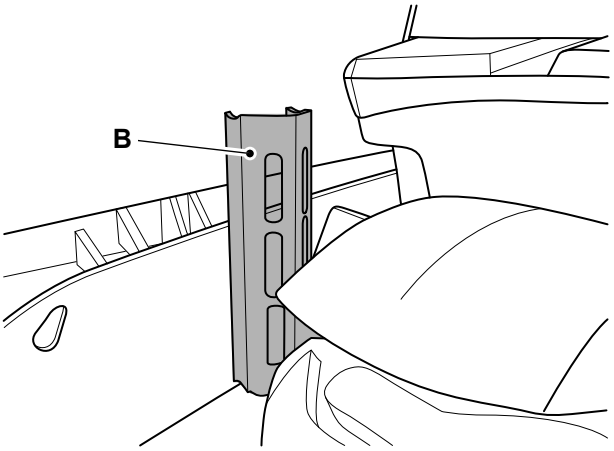
Fig 190.

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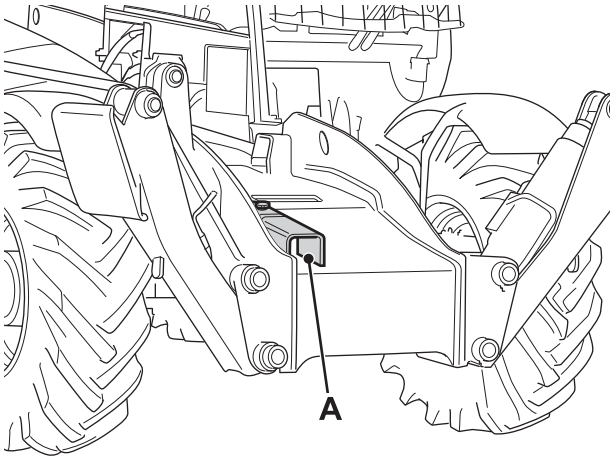
807540-1

Fig 191.



T068010

Fig 193.



T012120-2

Fig 192.

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Cleaning the Machine

Introduction

T3-062_3

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

ENG-3-3_2

Important: *Do not aim the water jet directly at bearings, oil seals, the engine air intake 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***.

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Cleaning the Machine

P5-3029

⚠ 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 194. (🗋 208)*.

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

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

Note: *If the machine is fitted with a roof mounted air conditioning condenser, read step 3.*

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* ***P****.*

Refit the undershields.

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

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

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

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

4 Debris can collect under the boom **J**. Remove especially all combustible material.

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

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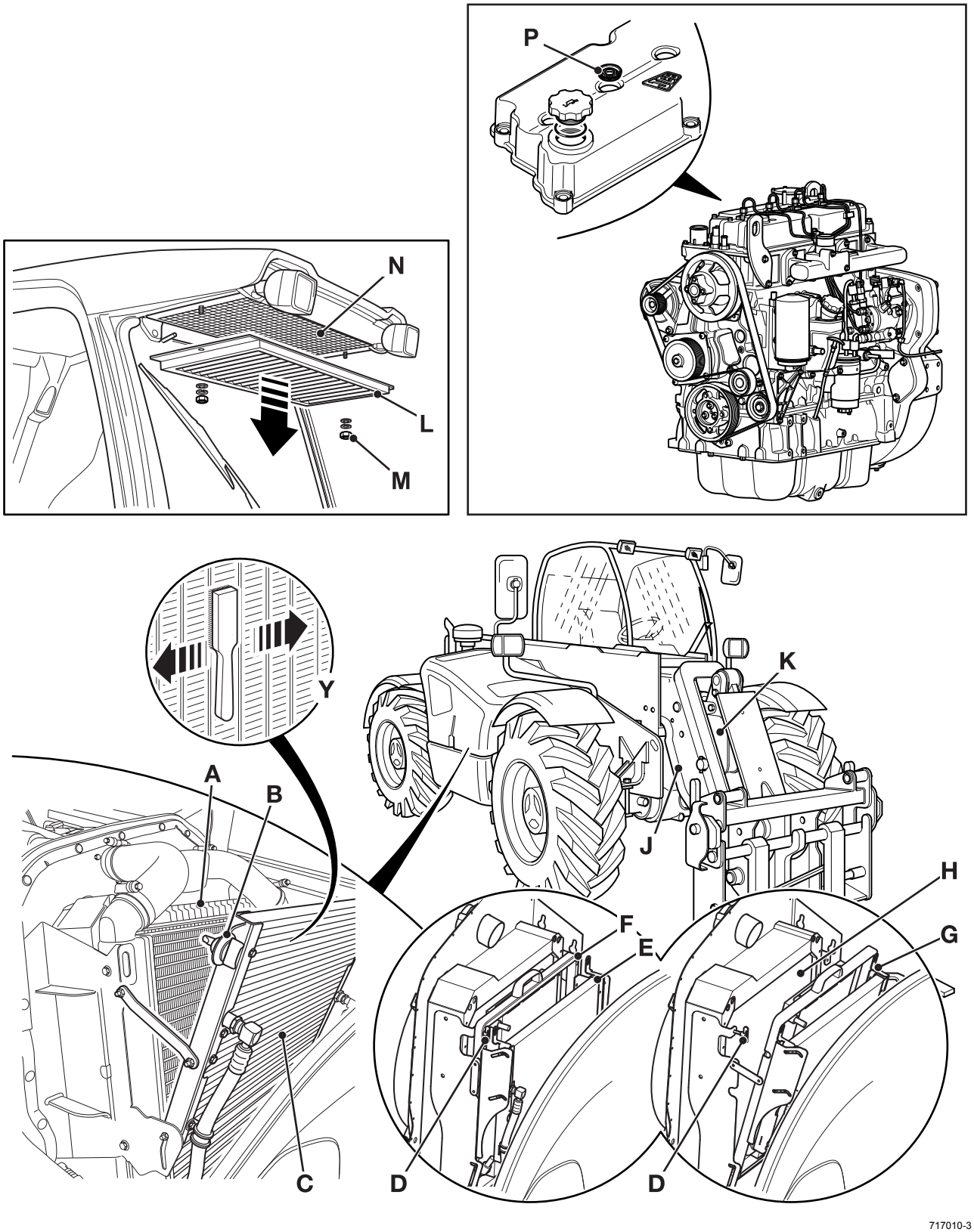


Fig 194.

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Fan Reverse (if fitted)

P5-3028

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

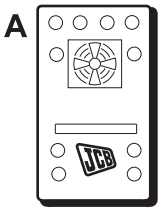
Note: *Always position the machine in a relatively clean area before reversing the fan to make sure that other debris (chaff, silage, etc.) is not drawn in.*

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.*



A340181-4

Fig 195.

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.

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Checking for Damage

Check the Machine Body and Structure

T3-063_5

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. Pay particular attention to the following:

- Inspect all lifting point welds.
- Inspect all pivot point welds.
- Inspect the condition of all pivot pins.
- 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.

Note damaged paintwork for future repair.

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 installed, 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_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:

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- 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.

Check the Electrical Circuits

T3-099

Inspect the electrical circuits regularly for:

- Damaged connectors
- Loose connections
- Chafing on wiring harnesses
- Corrosion
- Missing insulation
- Incorrect routing of harness

Do not use the machine if one or more of these faults are found. You must make sure that the electrical circuit is repaired immediately.

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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.

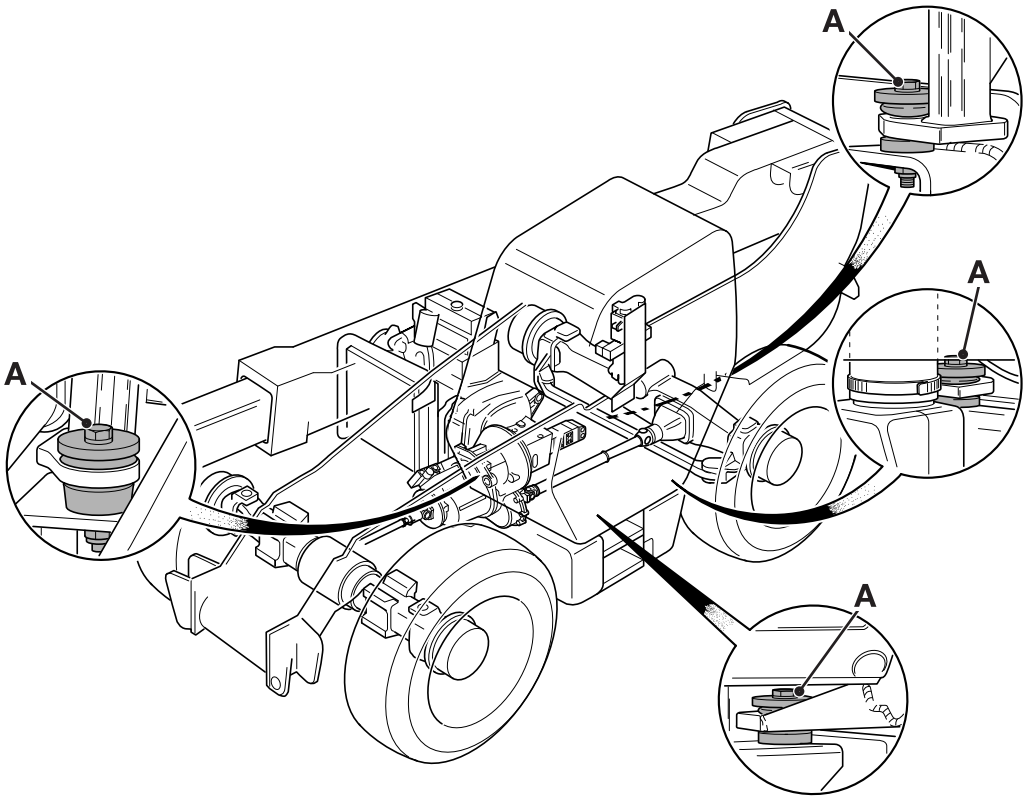
2 Make sure that all the ROPS/FOPS mounting bolts **A** are in place and are undamaged.

3 Make sure that the ROPS/FOPS mounting bolts **A** are tightened to the correct torque setting.

Table 17. Torque Settings

Item	Nm (lbf ft)
A	205 (151)(1)
A	244 (180)(2)

(1) 550/560-80 machines
(2) Other machines



C016650-1

Fig 196.

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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.*

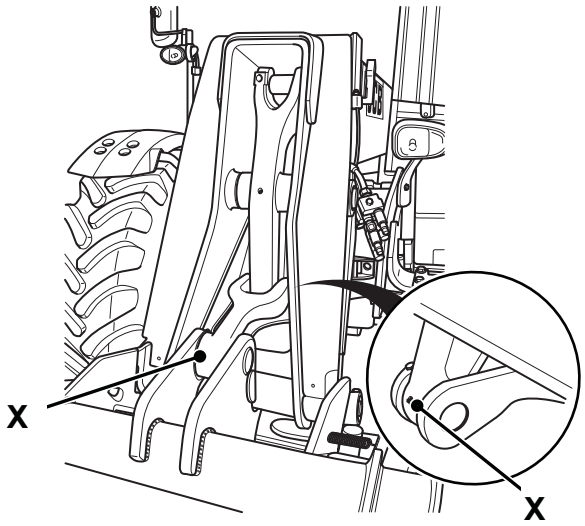
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Every 50 Hours

550/560-80 Machines

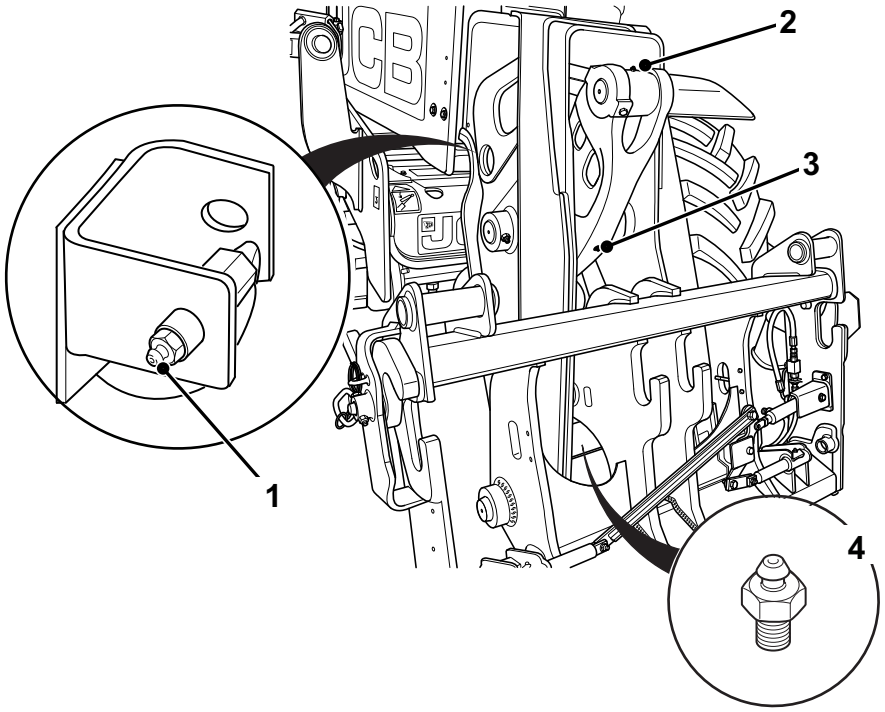
⇒ *Fig 197. (214)*, ⇒ *Fig 198. (214)* and *Fig 199. (215)*

Note: *To avoid damage to the pivot bushes **X** DO NOT grease them at this interval. Refer to the 500 hour greasing instructions for the correct procedure.* ⇒ *Every 500 Hours (223)*



C111490

Fig 197.



C111090

Fig 198.

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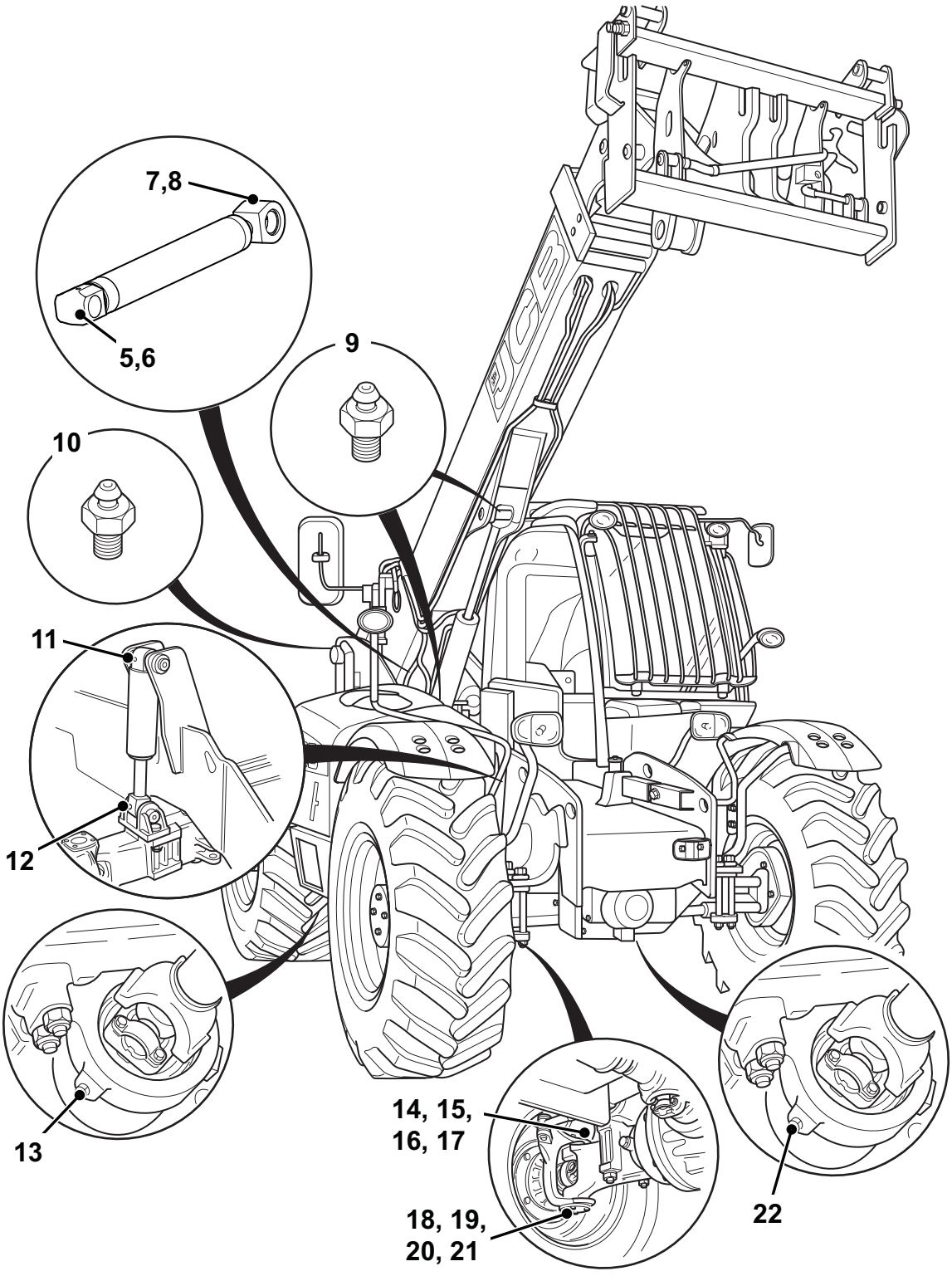


Fig 199. 550/560-80

Note: *All grease points are annotated. Not all grease points are illustrated (for example at each wheel hub).*

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Other Machines

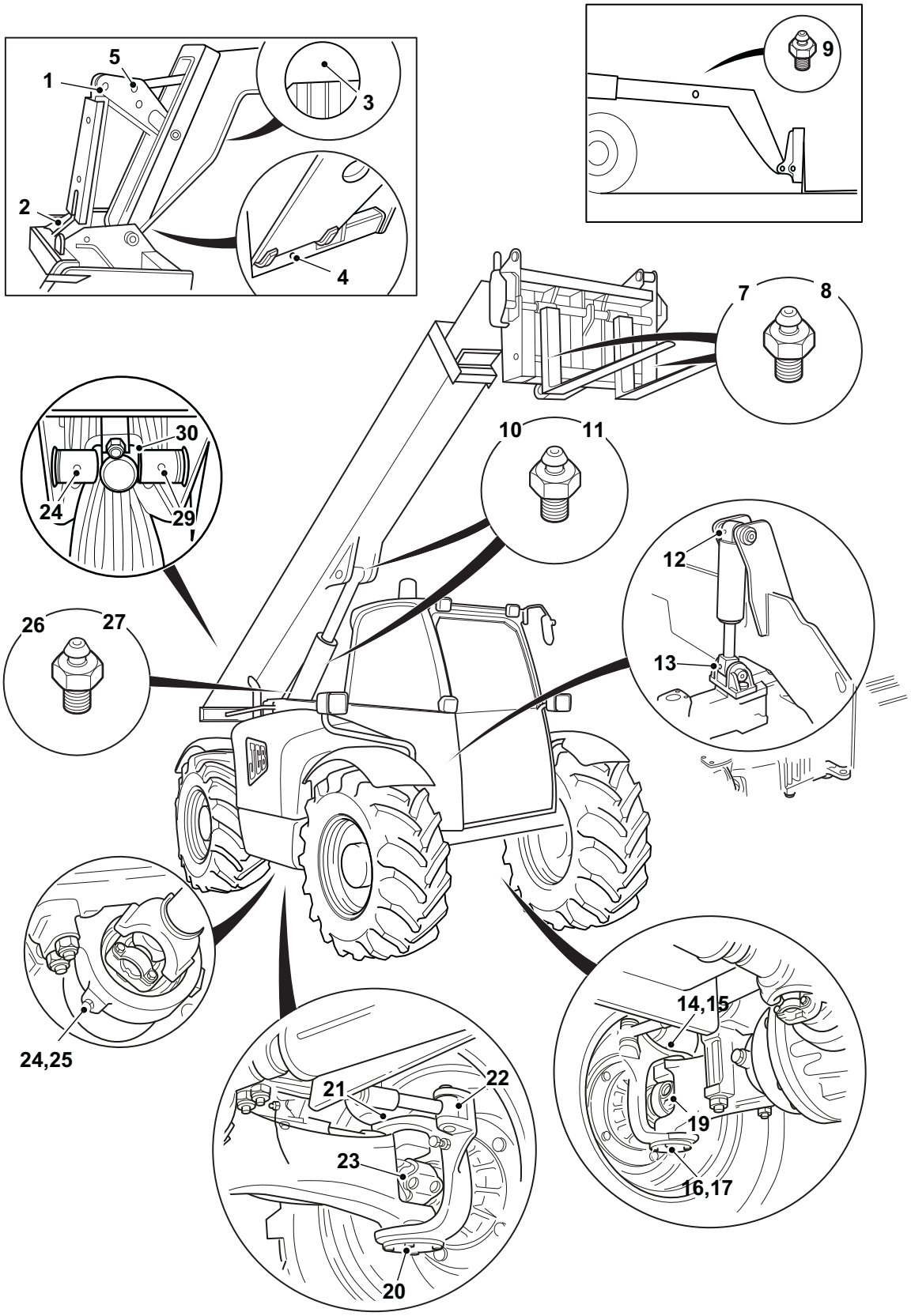


Fig 200. 531-70, 536-70, 541-70

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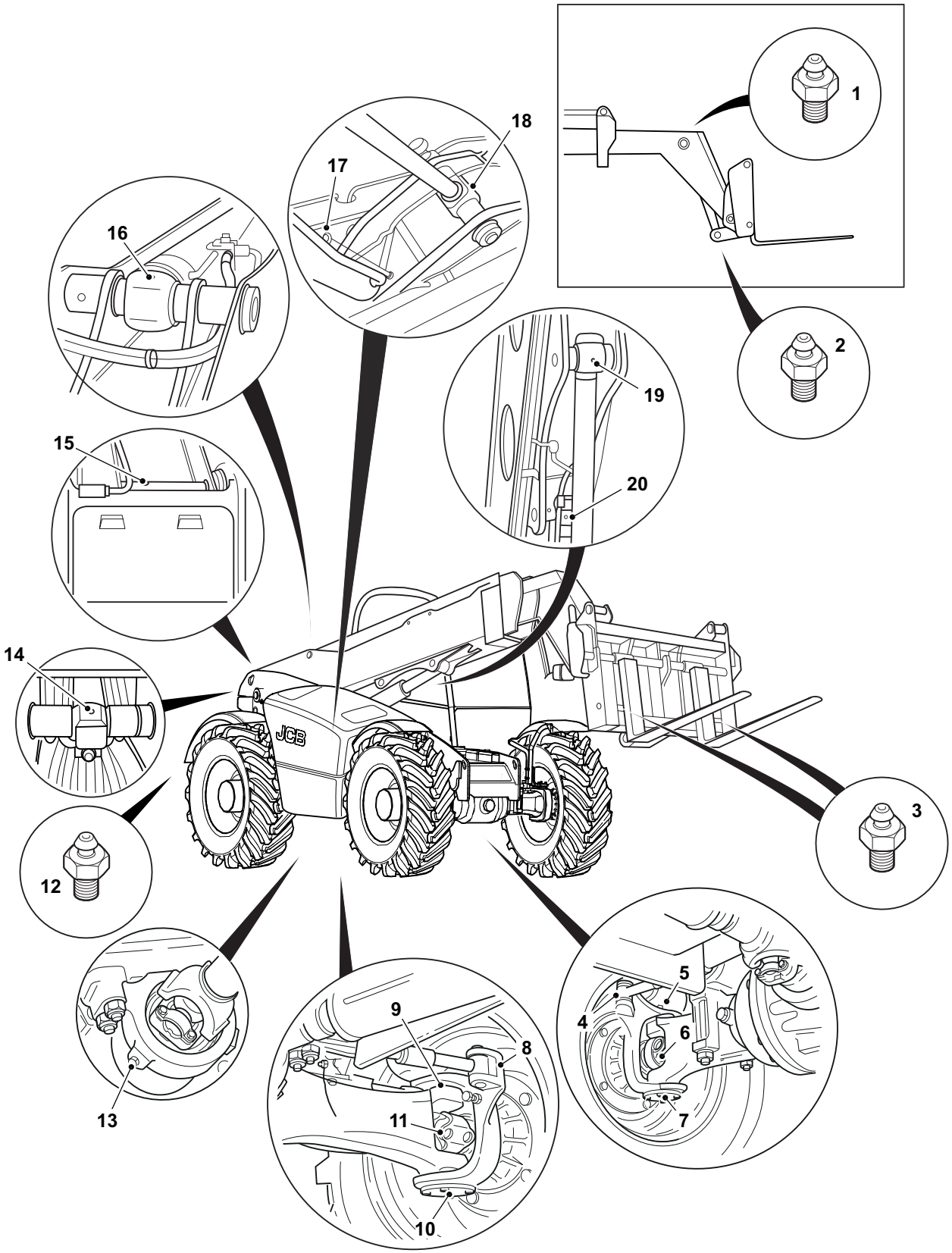


Fig 201. 533-105, 535-95

Note: *533-105:* ***⇨ Fig 202. (🗋 218)****.*

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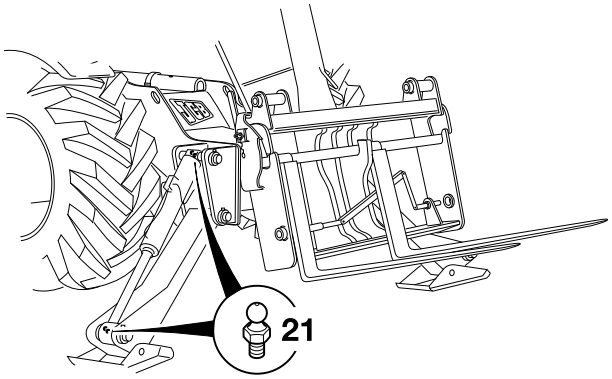


Fig 202. 533-105 only (both sides)

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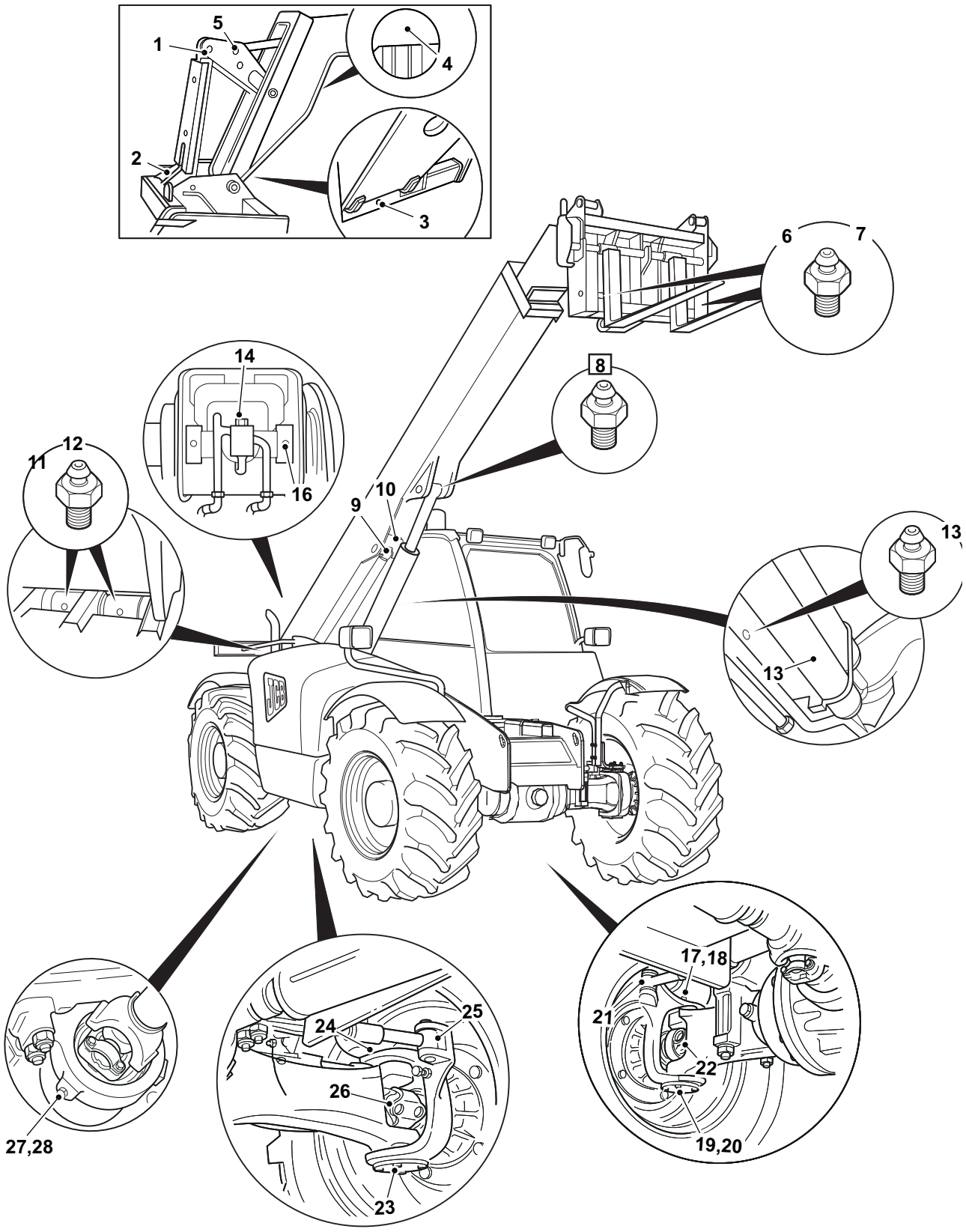


Fig 203. 536-60

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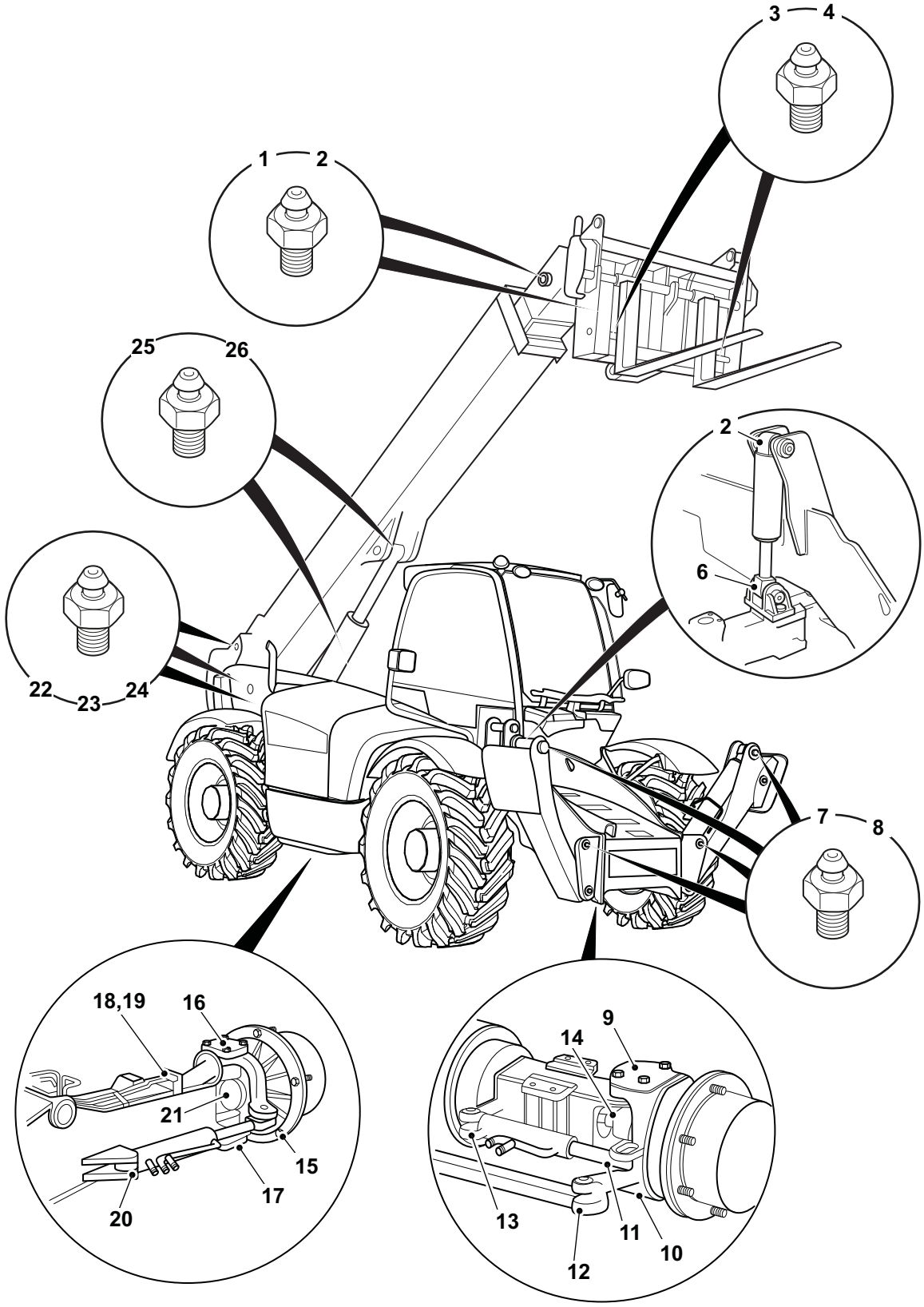


Fig 204. 540-140, 540-170

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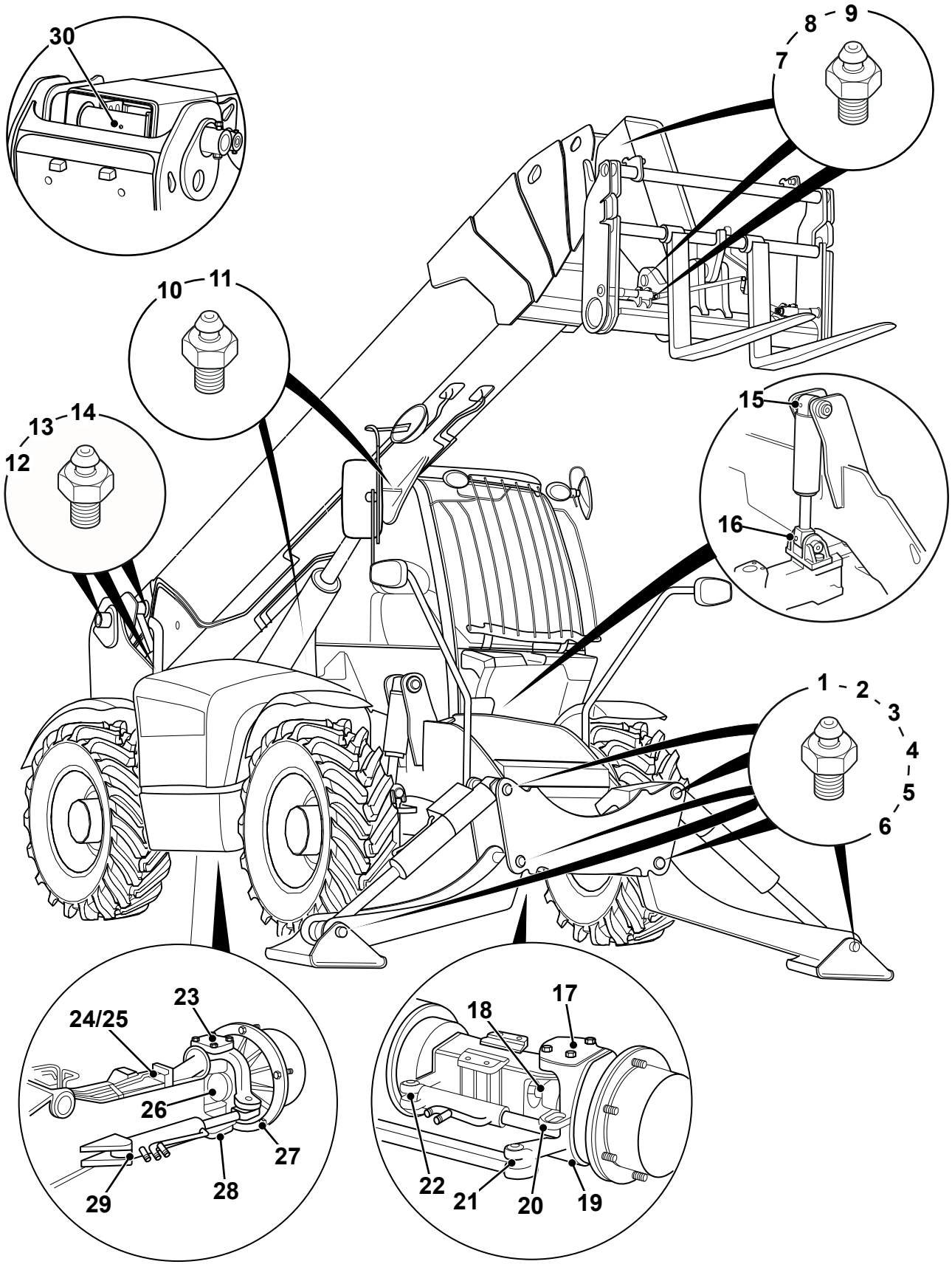


Fig 205. 540-200

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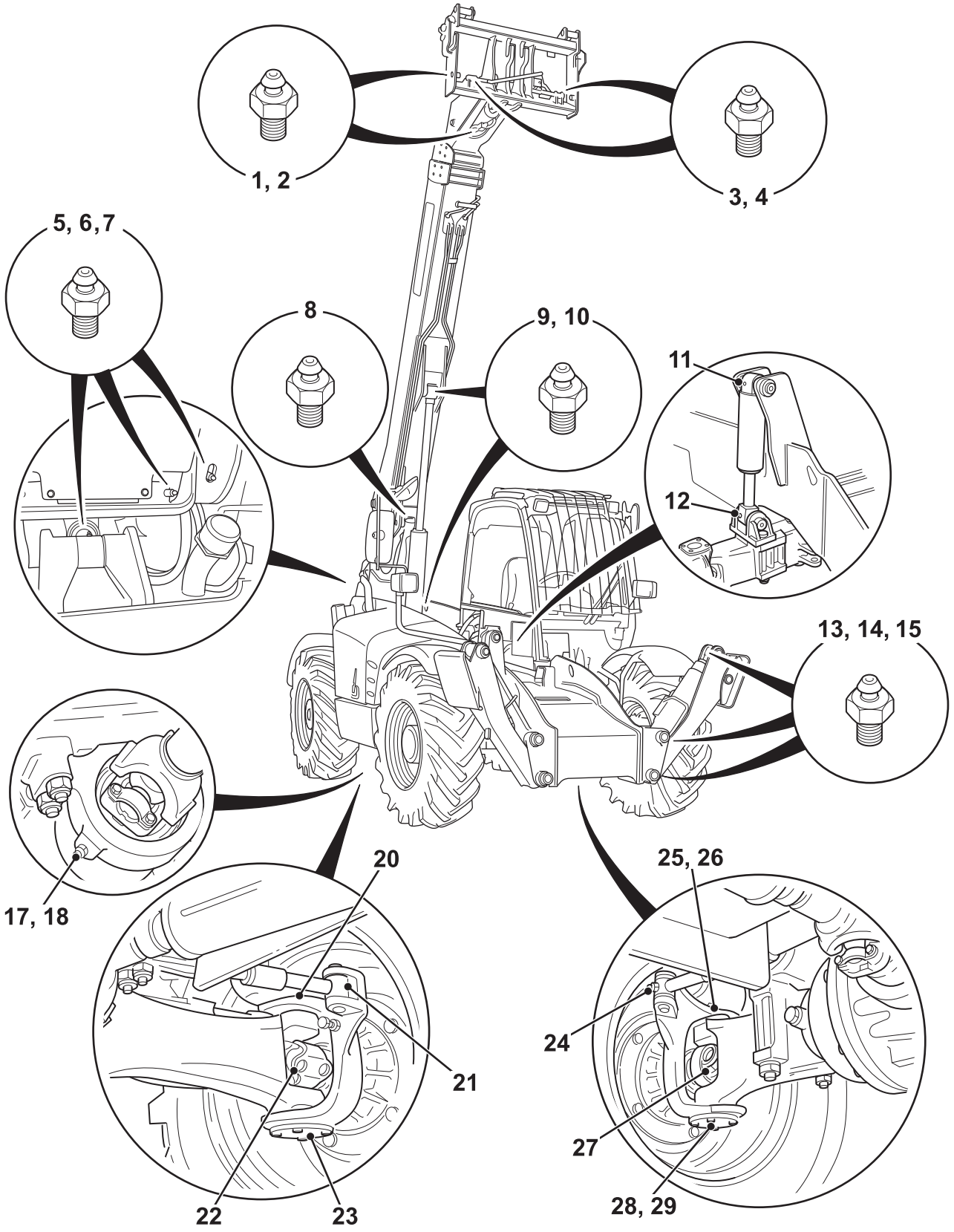


Fig 206. 535-125 HiViz, 535-140 HiViz, 540-140 HiViz

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Every 500 Hours

⚠ CAUTION

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

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

5-3-1-9

Boom

1 Extend the boom fully.

2 Spray Waxoyl evenly over all the sliding surfaces of the inner and outer boom sections **A** and **B** as shown.

3 Apply JCB Special HP Grease (Blue) to inner hoses and hose runs.

4 Allow 2-3 hours drying time before retracting the boom.

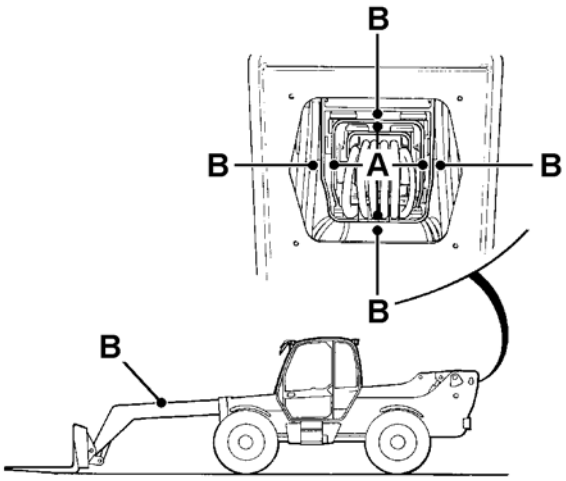


Fig 207.

Hydraulic Tow Hitch

1 Extend the hydraulic tow hitch fully.

2 Spray Waxoyl evenly over the surfaces **A**, **B** and **C** as shown.

3 Allow 2-3 hours drying time before retracting the hitch.

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

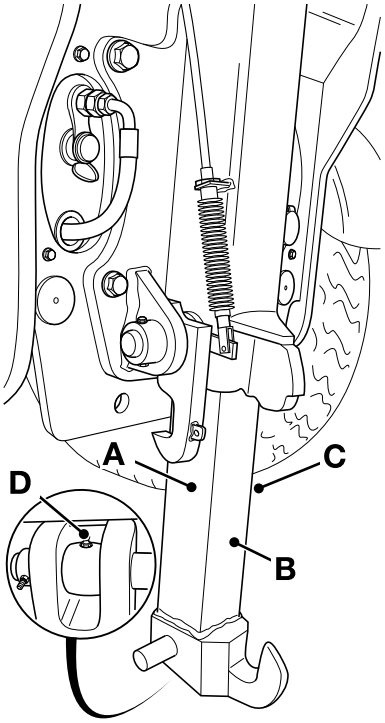


Fig 208.

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Drive Shafts

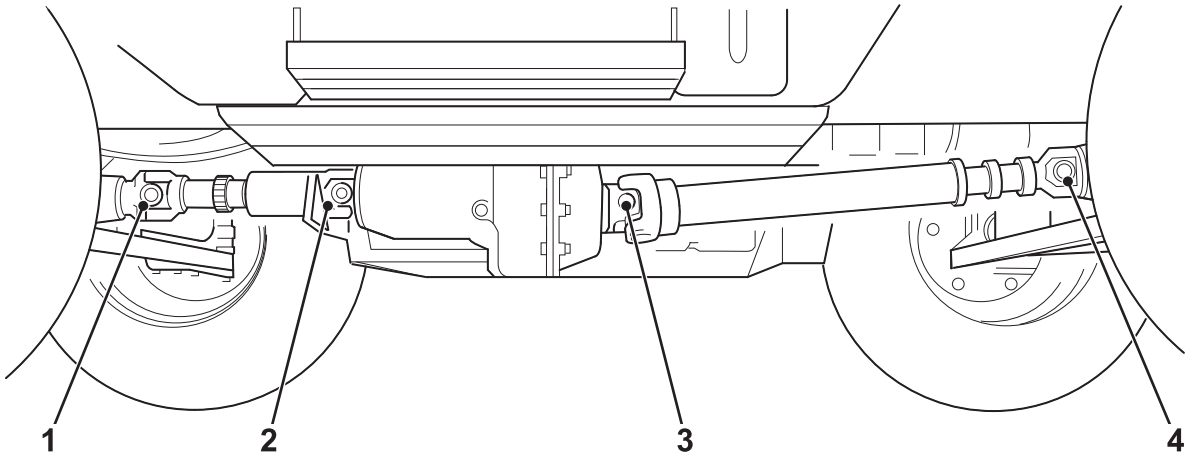


Fig 209.

Pivot Bushes (550/560-80 Machines)

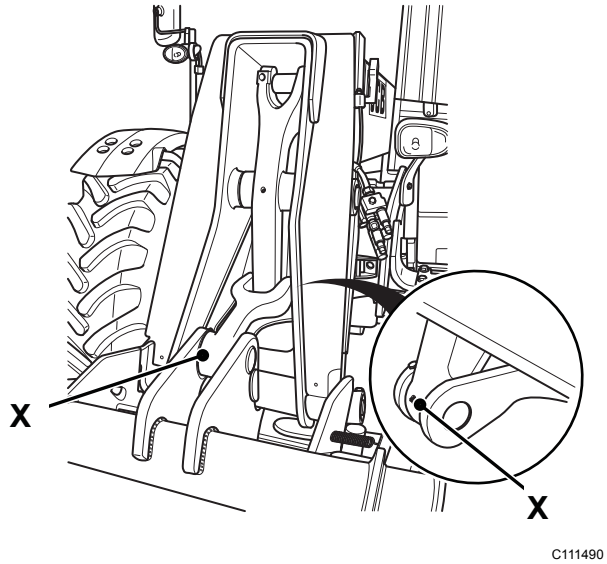


Fig 210.

Note: *Do not grease the bushes* ***X*** *at more frequent intervals than 500 hours. Failure to follow this instruction will result in damage to the bushes.*

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Chain Pin/Roller Greasing

(540-200 Machines - if fitted)

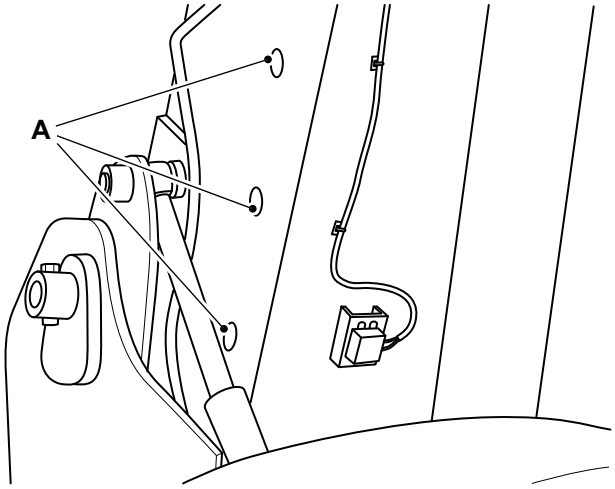


Fig 211.

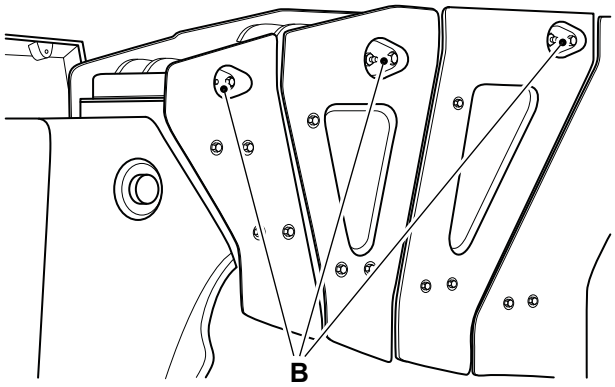


Fig 212.

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Every 1000 Hours

Note: *Not required for 540-200 machines.*

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

1 Position the machine as shown with carriage on the ground.

2 Remove inner extension ram pivot pin **E** and coat with Waxoyl.

3 Refit pivot pin.

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

5 Refit pivot pin.

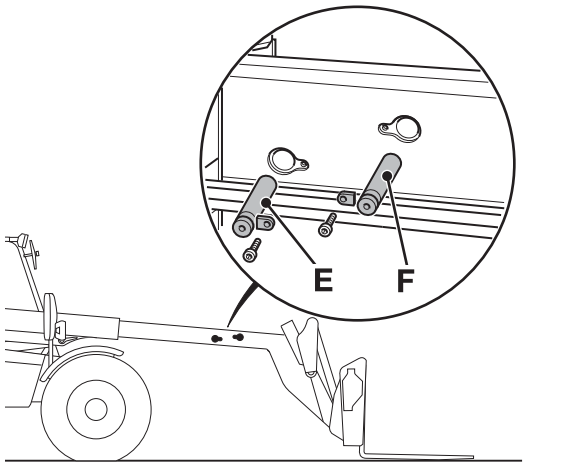


Fig 213.

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Oiling

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

⚠ WARNING

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

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

GEN-4-1_1

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Boom Chains

The boom drive chains should be sprayed with JCB Chain Lubricant at the periods stated in the Service Schedules.

Note: *Spray the chain with an even coating, avoid over oiling.*

1 Extend boom

2 With the boom extended spray the drive chains A with JCB Chain Lubricant.

3 Retract boom.

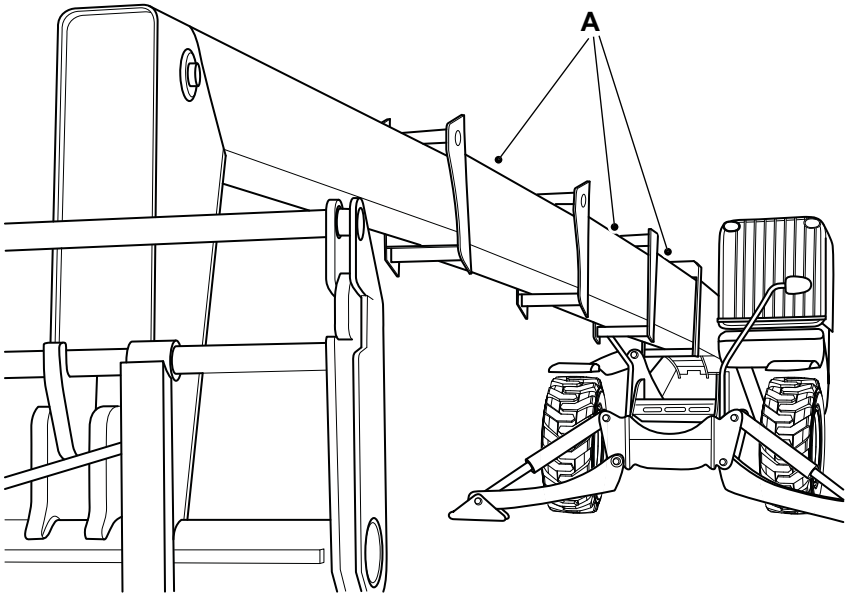


Fig 214.

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Access Panels

Introduction

T3-100

When placed in their maintenance position, the access panels give you access to parts or areas of the machine that are not required during machine operation.

Before you operate the machine, make sure that all of the access panels are in their operation position and secure.

Battery Cover

Opening and Closing

Single Step Installation

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

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

3 Close and lock the battery compartment.

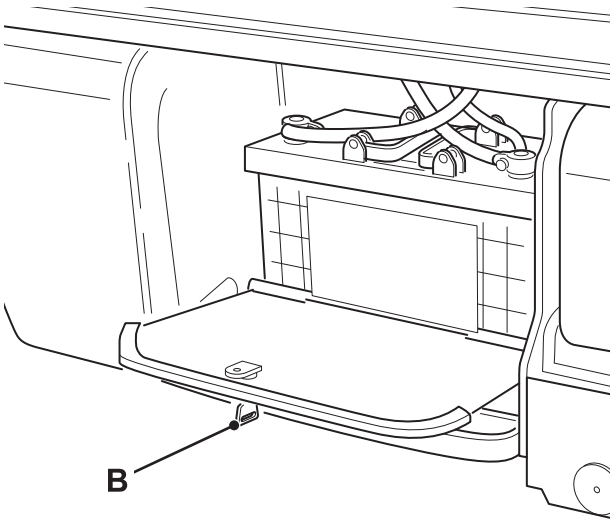


Fig 215.

Twin Step Installation

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

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

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

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

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

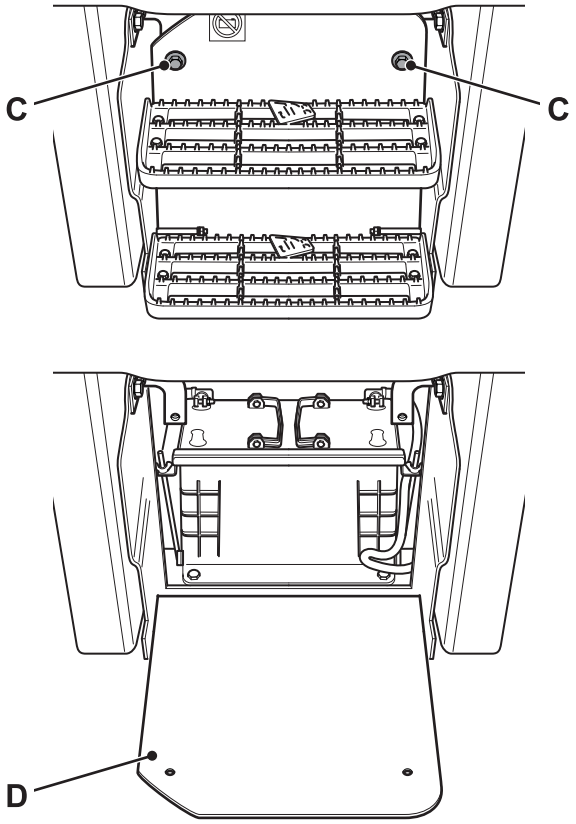


Fig 216.

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Engine Cover

P5-3012_2

Opening and Closing

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

⚠ WARNING

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

5-2-6-5

⚠ WARNING

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

10-1-1-40

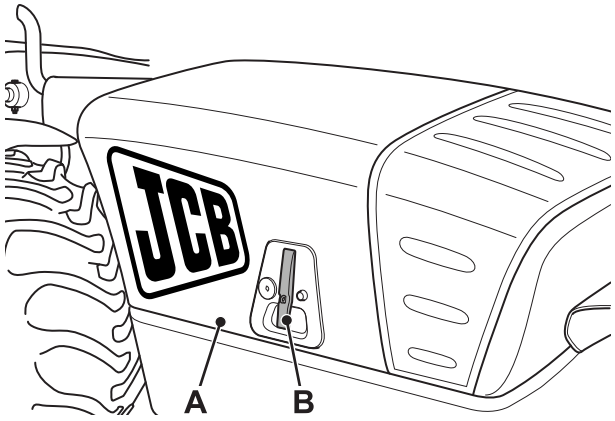
Important: *Before you stop the engine, you must allow the engine to operate at low idle for four minutes. The delay allows the coolant temperature to stabilise before you open the engine cover.*

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.*



263500-3

Fig 217.

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Rear Cover (if fitted)

P5-3027

Opening and Closing

Open rear cover **B** to get access to the filler cap and sight glass.

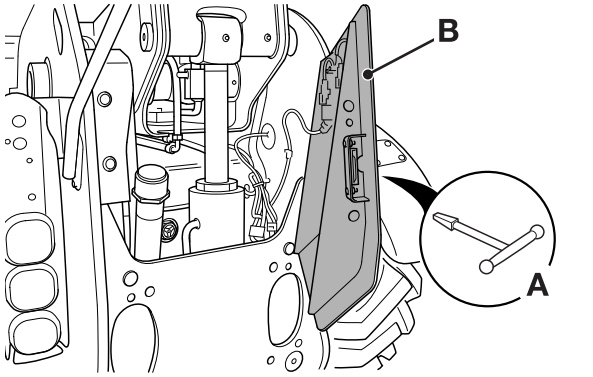
1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.

2 Use key **A** to unlock the cover.

3 Carefully open the cover to avoid damage.

To close the cover, repeat steps 2 to 3 in reverse.

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



732370-2

Fig 218.

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Undershield

Removal and Replacement

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

⚠ WARNING

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

Block all four wheels before getting under the machine.

2-3-2-1

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

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

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

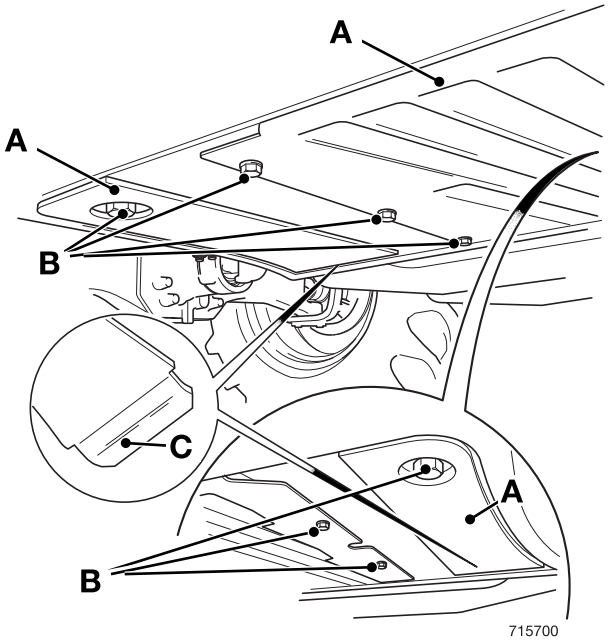


Fig 219.

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Cab Heater and Air Conditioning

Changing the Air Intake Filter

P5-3014

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

⚠ WARNING

Boom 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

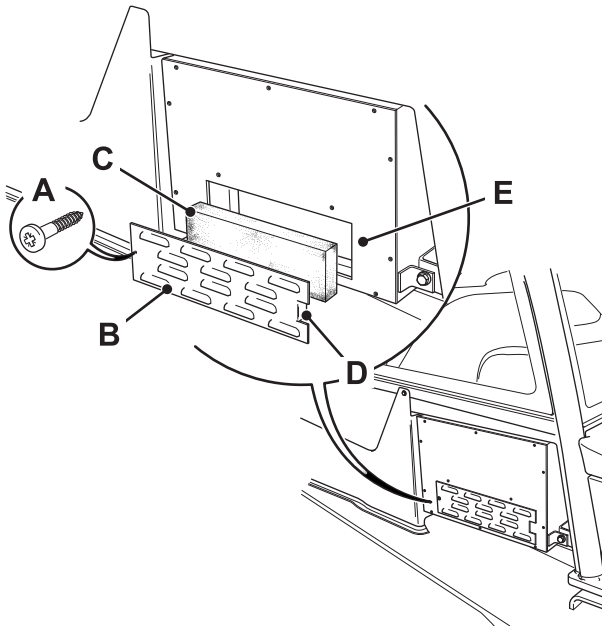
1 Make the machine safe with the boom lifted. Refer to ***Prepare the Machine for Maintenance***.

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

3 Remove the filter **C**.

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

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



A711630-2

Fig 220.

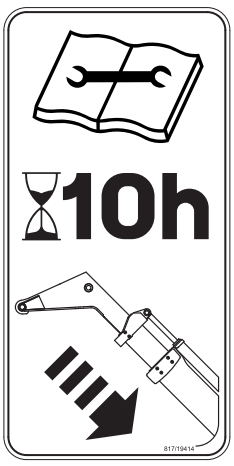
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Boom

Re-phasing of 3-Stage Booms

P5-3020-1

3-stage booms can go out of phase if the hydraulic rams are not fully retracted regularly. You must fully retract the boom at least once every 10 hours of operation.



817-19414-1

Fig 221.

To re-phase the boom sections - hold the control in the retract position with the engine at high idle speed until the boom sections are fully retracted.

Boom Chains

Adjustment (for Chain Tensioning)

1 Position the machine on firm level ground, apply the park brake. Raise the boom to the horizontal position and partially extend the boom to gain access to the upper chain adjustment nuts **A**.

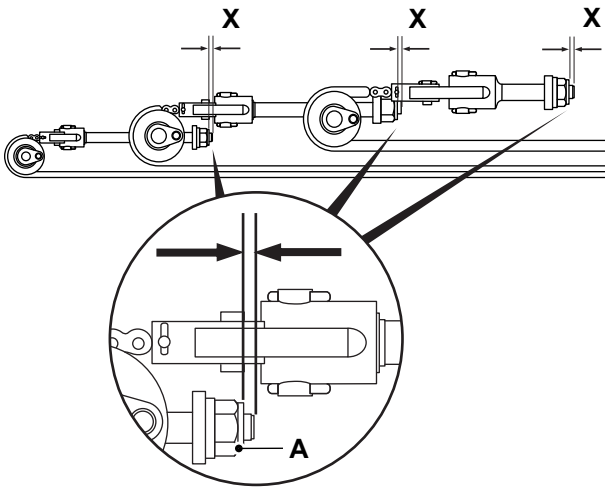


Fig 222.

If any of the chains have been replaced, you must check/set the upper adjustment screws **X** to 30mm.

2 Extend the boom again until the lower chain adjustment nuts **B** are accessible.

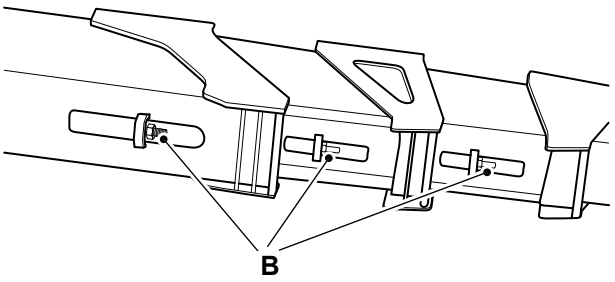


Fig 223.

If any of the chains have been replaced, you must check/set the lower adjustment screws so as to take enough load to restrict movement of the chain anchor.

3 Fully extend the boom and then retract by approximately 1m. Measure the gap between the underside of the extend chain and the top of the intermediate boom at the mid-point of each span.

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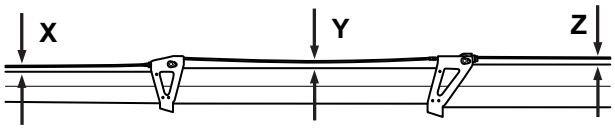


Fig 224.

Table 18.

Item	X	Y	Z
Dimension	65mm	90mm	80mm

4 If tightening is required extend the boom approximately 0.5m before tightening the lower adjustment screws **B**.

5 The boom should then be retracted before repeating steps 3-4.

Visual indication of chain stretch and tension: Chain tension can be observed by watching the amount of slack in the upper chains during the retract cycle. Additional features to the front **C** and rear cab side **D** of the boom also give indication to the tension or stretch condition of the chains.

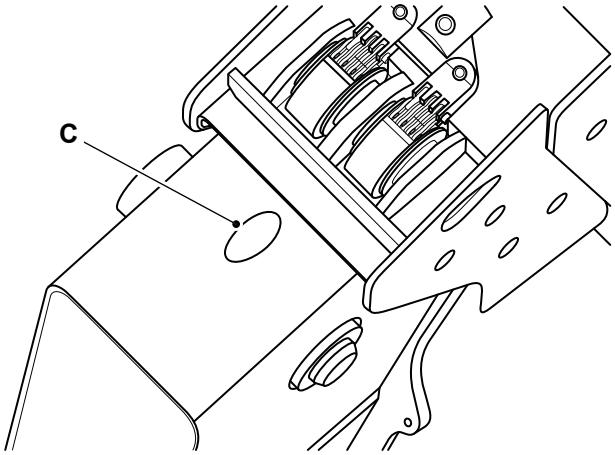


Fig 225.

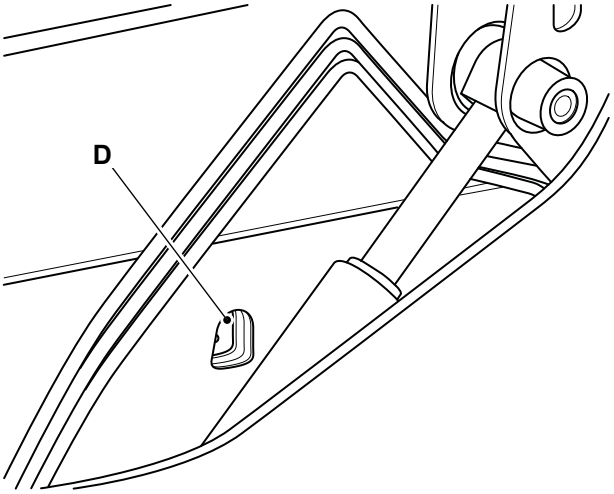


Fig 226.

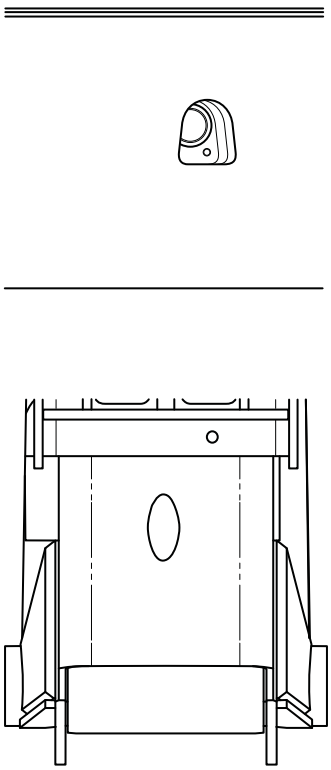


Fig 227. Correct adjustment (cab side view and top view)

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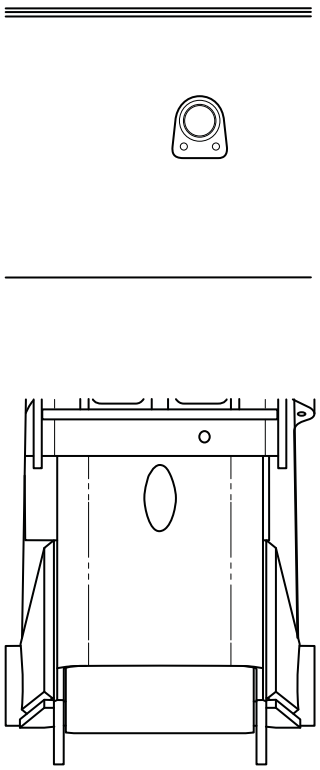


Fig 228. Adjustment required (cab side view and top view)

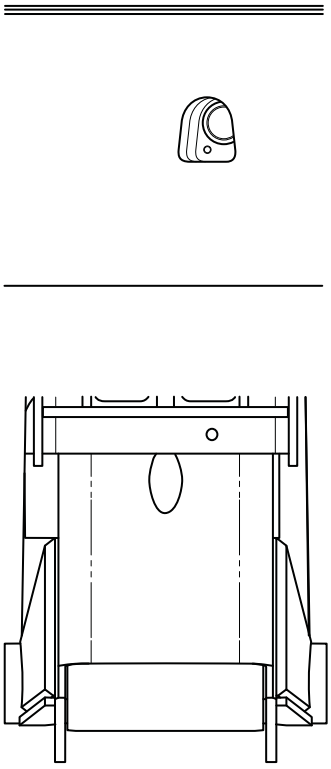


Fig 229. Exesive stretch or loss of tension (cab side view and top view)

Note: *Damage may occur to the boom structure or internals if boom is allowed to achieve this condition*

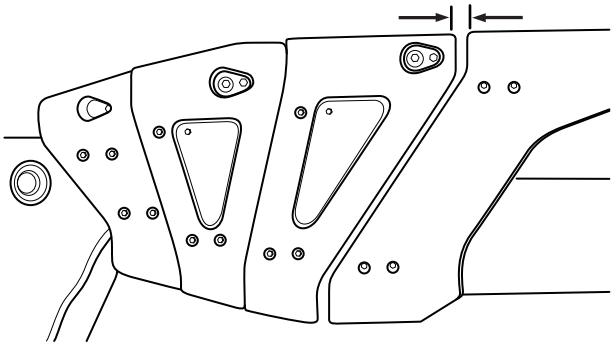


Fig 230.

A gap between the outer and 1st intermediate, even though the remaining booms are together. This means that the upper chains have stretched and need to be tightened

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Adjustment (for Chain Stretch)

1 Position the machine on firm level ground, apply the park brake. Raise the boom to the horizontal position and partially extend the boom until the lower chain adjustment nuts **B** are accessable.

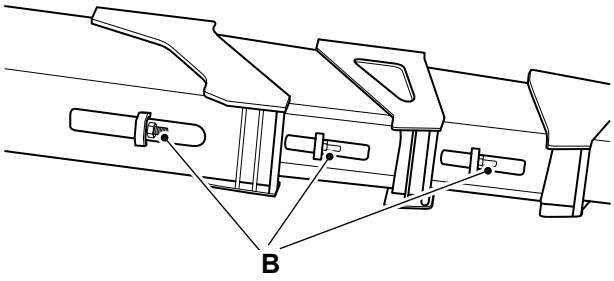


Fig 231.

2 Loosen the lower chain adjustment screws by approximately 15mm.

3 Add an additional 10mm (**X**) onto each of the upper adjustment screws **A**.

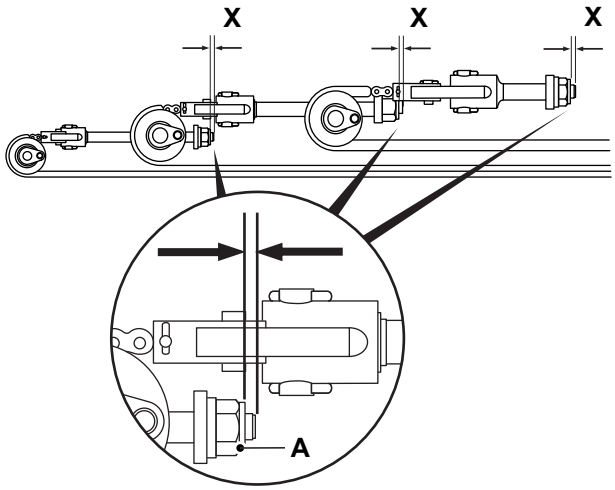


Fig 232.

4 Repeat steps 3-4 of 'Adjustment (for chain tensioning)' until correct settings are achieved.

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Brakes

Park Brake

Introduction

T3-071

⚠ WARNING

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

T3-087

⚠ 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 fourth gear.

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 1500 RPM. The machine should not move.

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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).

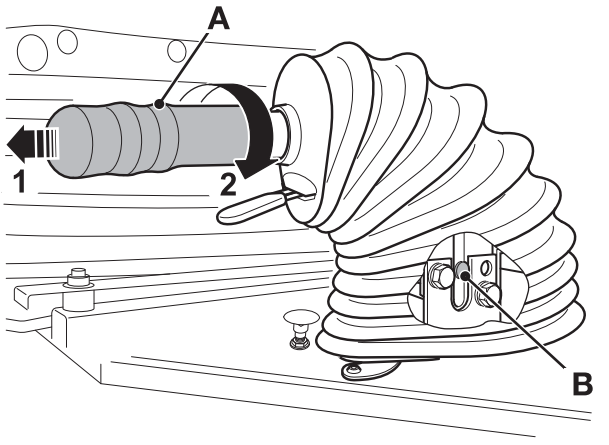
Failure to disengage the park brake fully will result in excessive wear of the park brake mechanism.

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.



A347580A-8

Fig 233.

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Foot Brake (Excluding 550/560-80 Machines)

Checking the Foot Brake Fluid Level

⚠ WARNING

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

2-3-2-5_1

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

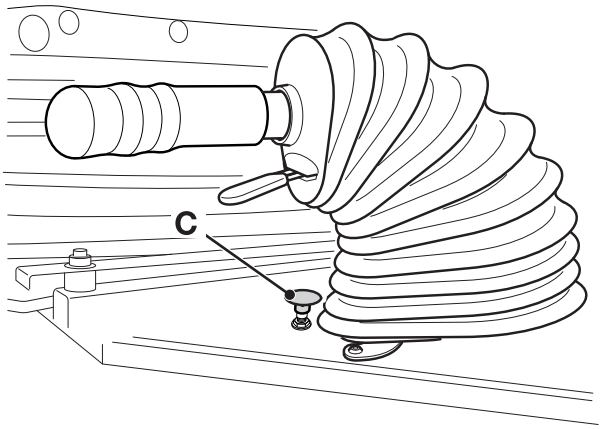


Fig 234.

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

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

⚠ CAUTION

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

2-3-5-1_2

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

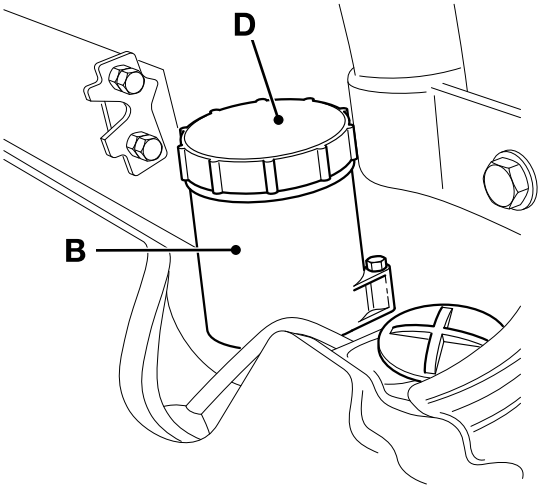


Fig 235.

Footbrake (550/560-80 Machines)

The braking system uses the machine hydraulic fluid supply so no reservoir is necessary.

The system stores energy in an accumulator for use when the engine is not running, therefore maintenance on this system must be done only by suitably qualified and competent persons.

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Electrical System

Battery

Battery Disconnection/Connection

T3-019_4

⚠ 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 burnt.

5-2-2-4_2

Disconnection

1 Get access to the battery. See ***Access Panels***.

2 If the machine has a battery isolator, move the switch to the OFF position then remove the key.

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

Connection

1 Check the battery.

a If the terminal is dirty, clean the post.

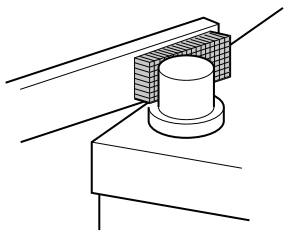


Fig 236.

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 If the machine has a battery isolator, move the switch to the ON position.

4 Close and lock the access panels.

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Checking the Electrolyte Level

T3-020_3

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

1 Get access to the battery. See ***Access Panels***.

2 Disconnect and remove battery. See ***Battery Disconnection/Connection.***

⚠ WARNING

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

2-3-4-6

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

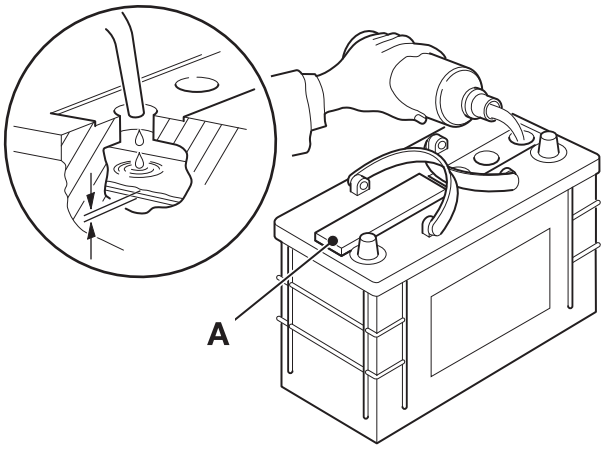


Fig 237. Typical Battery

4 Refit battery.

5 Close and lock the access panels.

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Battery Isolator

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

⚠ 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 Get access to the battery isolator. Refer to ***Access Panels, Battery Cover***.

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

a Disconnect the battery.

a Turn the battery isolator key **A** in a counter-clockwise direction **B** and remove.

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

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

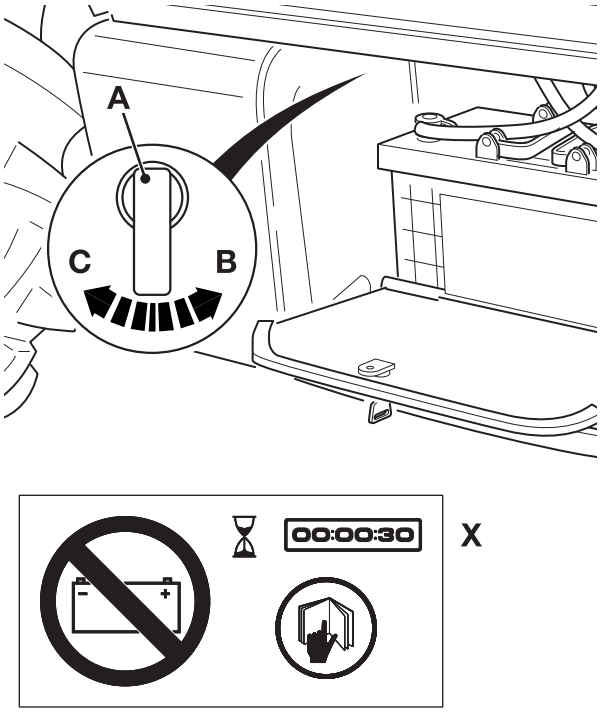


Fig 238.

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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.

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Fuses

Introduction

P5-3025_2

⚠ 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 in four banks. Each fuse position in each bank is numbered to aid identification. If a fuse ruptures, find out why and rectify the fault before fitting a new one.

To get access to the fuses:

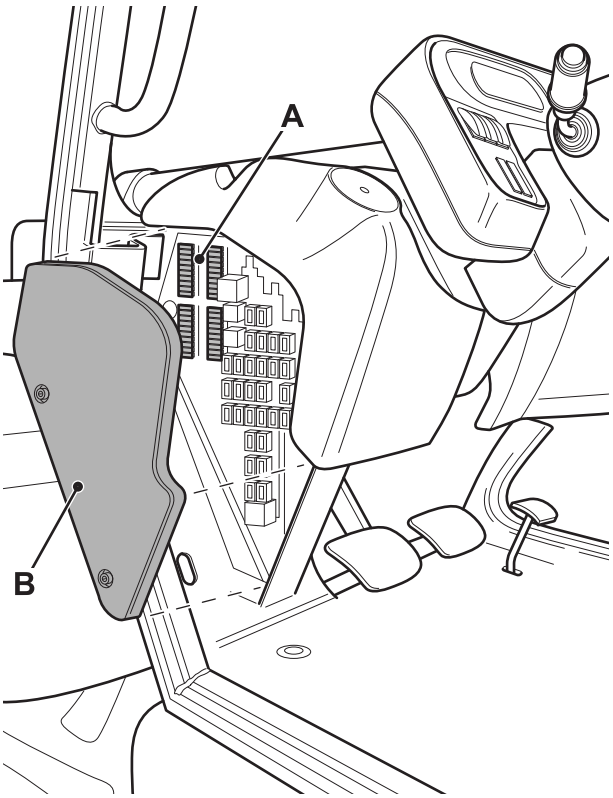
1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.

2 Open the cab door.

3 Hold the cover **B** then remove the two screws.

4 Remove the cover **B**.

Note: *Additional fuse links are fitted at the battery positive terminal and within the engine compartment. Refer to* ***Primary Fuses****.*



810830-4

Fig 239.

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531-70, 535-95, 536-60, 536-70, 541-70

LLMC Machines with SE, SF Engines and 4-Speed Transmission

This specification is only applicable to machines with dual lever controls **X** and single lever push button controls **Y**. LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.

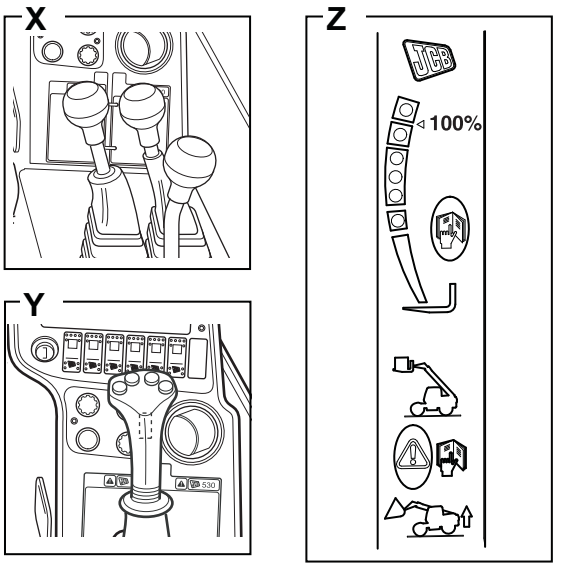


Fig 240.

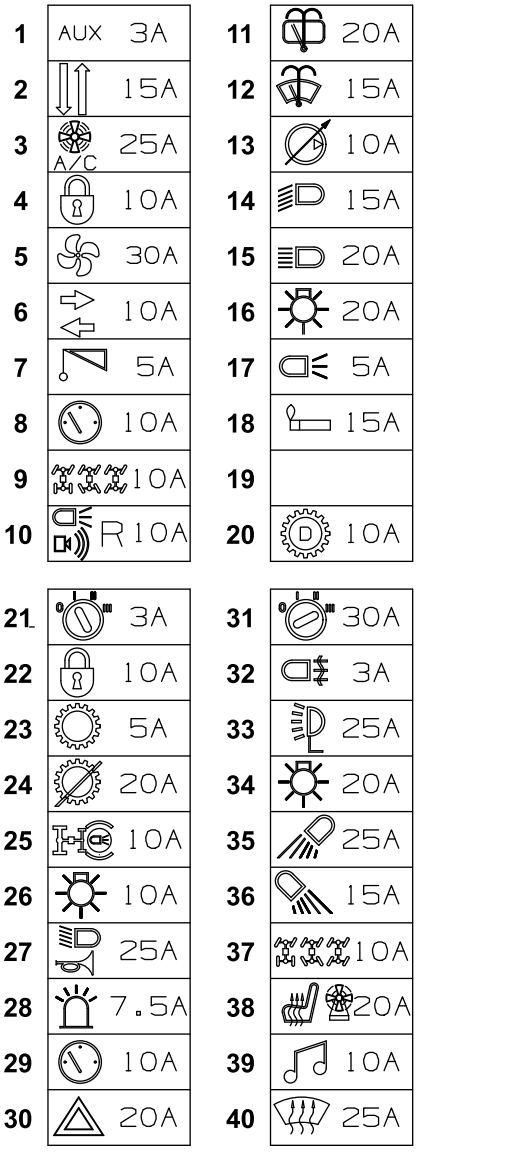


Fig 241.

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

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Table 19.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	3
2	Auxiliary/Hitch hydraulics	15
3	Air conditioning	25
4	Immobiliser	10
5	Heater	30
6	Indicators	10
7	Jib Interface	5
8	Instruments	10
9	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Roadlights	20
17	Right Hand Sidelights	5
18	12 Volt accessory socket	15
19	Not Used	-
20	Drive Control ECU	10
21	Starter relay	3
22	Immobiliser	10
23	Transmission	5
24	Transmission	20
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Instruments	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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Non LLMC Machines with SE, SF Engines and 4-Speed Transmission

This specification is only applicable to machines with dual lever controls **X** and single lever push button controls **Y**. Non LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.

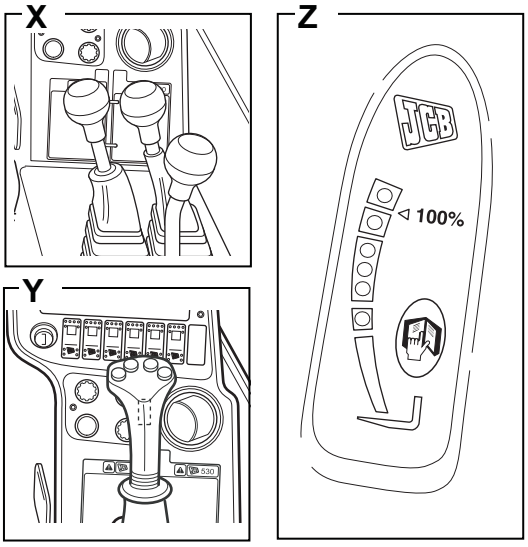


Fig 242.

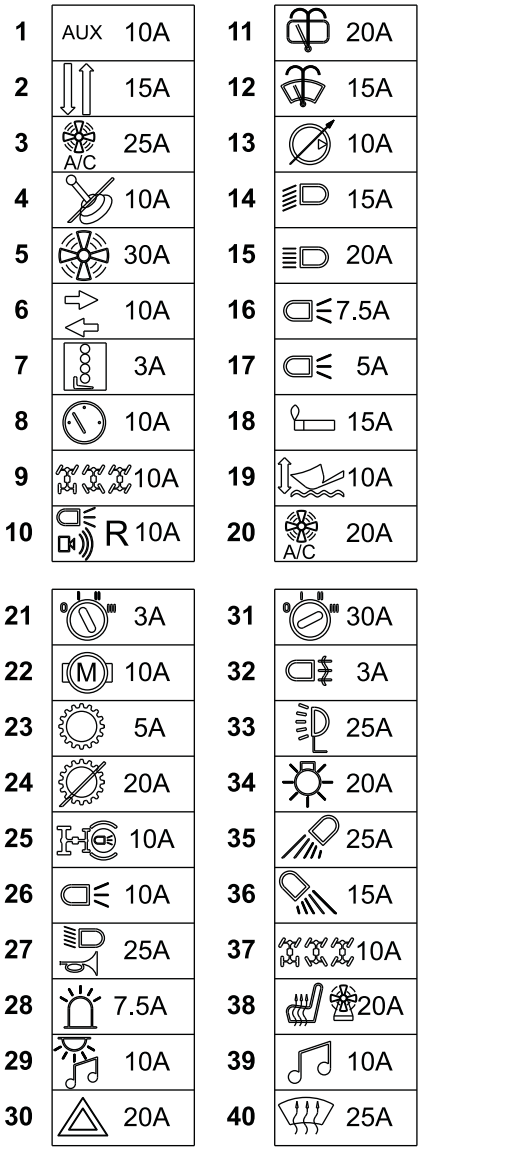


Fig 243.

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

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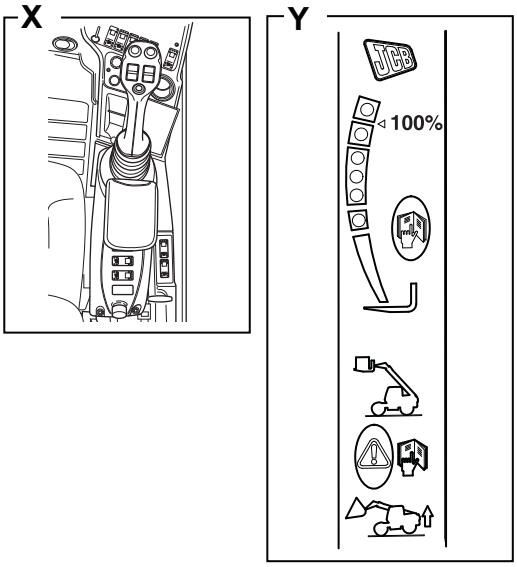
Table 20.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Air conditioning	25
4	Joystick isolation	10
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Smooth Ride System (SRS)	10
20	Air conditioning	20
21	Starter relay	3
22	Engine shut-off solenoid (ESOS)	10
23	Transmission	5
24	Transmission	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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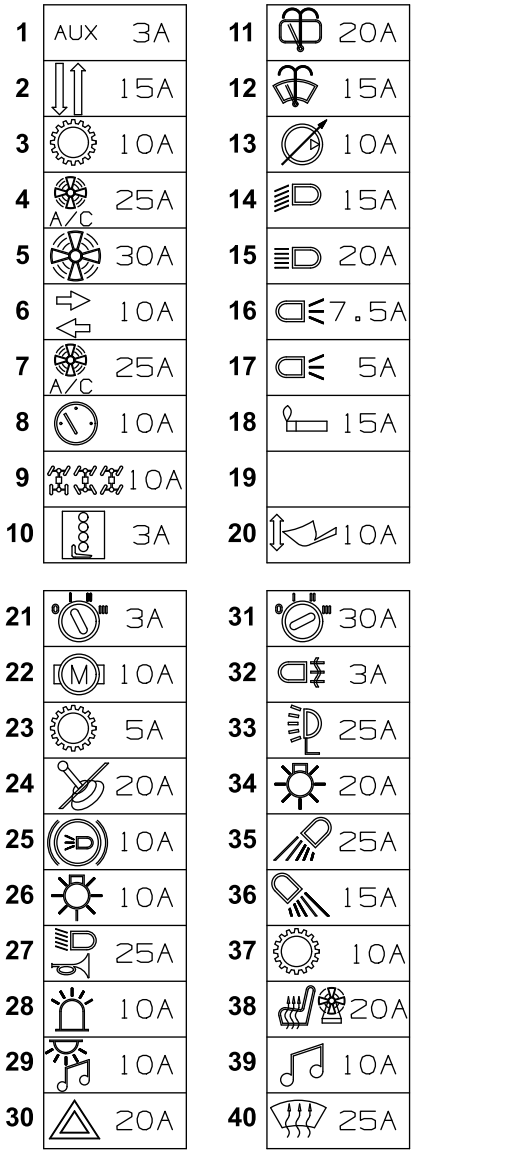
LLMC Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to machines with single lever seat pod mounted controls **X**. LLMC machines have the display shown at **Y**.To aid identification, refer to the illustration for cab features.



C094300-C6

Fig 244.



817-h2345-3-sheet1F

Fig 245.

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

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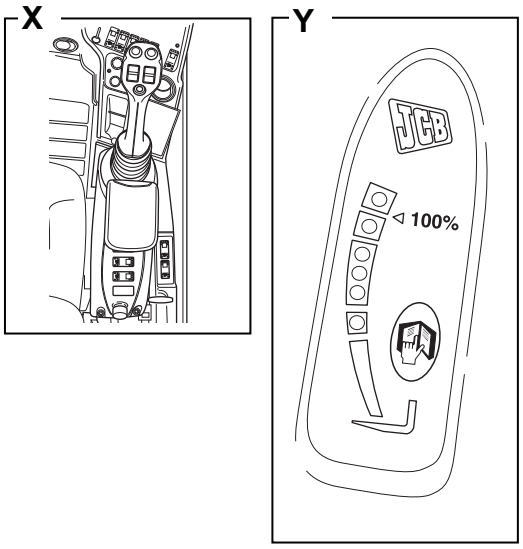
Table 21.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	3
2	Auxiliary/Hitch hydraulics	15
3	Transmission	10
4	Air conditioning	25
5	Heater	30
6	Indicators	10
7	Air conditioning	25
8	Instruments	10
9	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
10	Longitudinal Load Moment Indicator (LLMI)	3
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Not Used	
20	Hydraulics ECU	10
21	Ignition	3
22	Fuel pump	10
23	Transmission	5
24	Joystick isolation	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	10
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Transmission	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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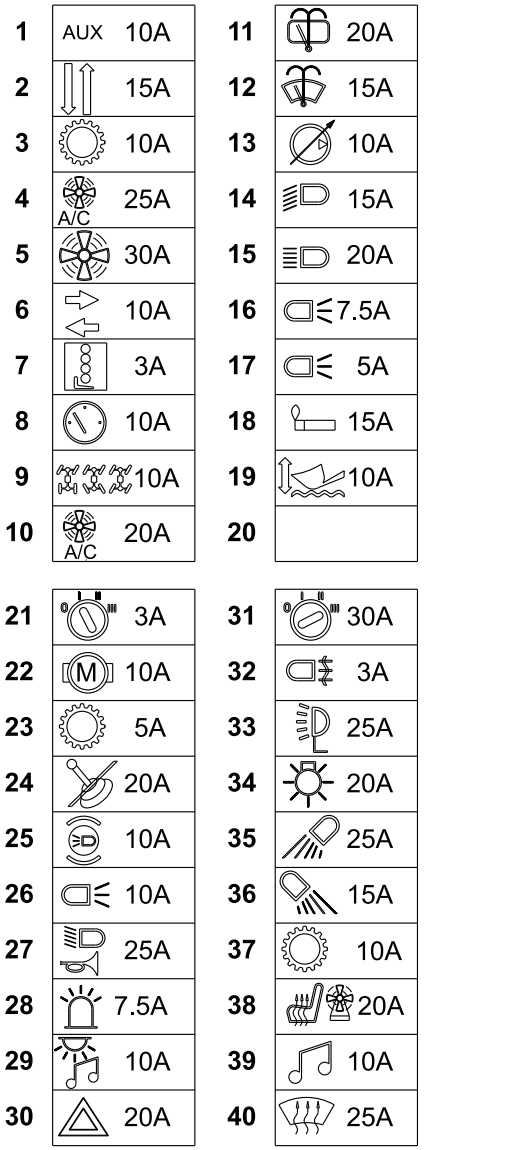
Non LLMC Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to machines with single lever seat pod mounted controls **X**. Non LLMC machines have the display shown at **Y**.To aid identification, refer to the illustration for cab features.



C094300-C7

Fig 246.



332-E7740-3(F)-C1

Fig 247.

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

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Table 22.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Transmission	10
4	Air conditioning	25
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Steer controller and proximity switches, Single lever control (Thumbwheel type)	10
10	Air conditioning	20
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Smooth Ride System (SRS)	10
20	Spare	
21	Starter relay	3
22	Fuel pump	10
23	Transmission	5
24	Joystick isolation	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Transmission	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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Non LLMC Machines with SF Engines and 4-Speed Transmission

This specification is only applicable to machines with single lever cab mounted thumbwheel controls **X** and centre warning light cluster **Y**. Non LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.

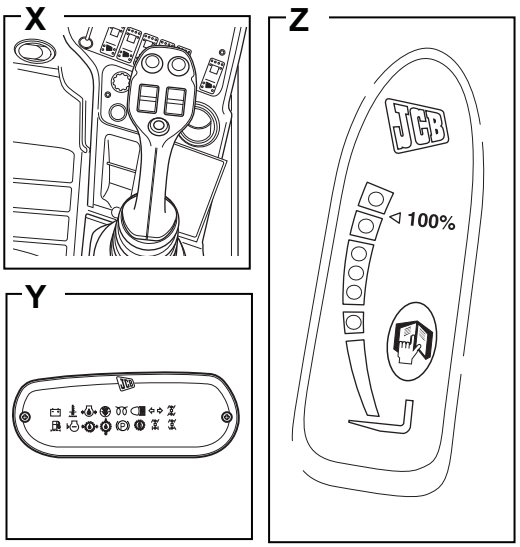


Fig 248.

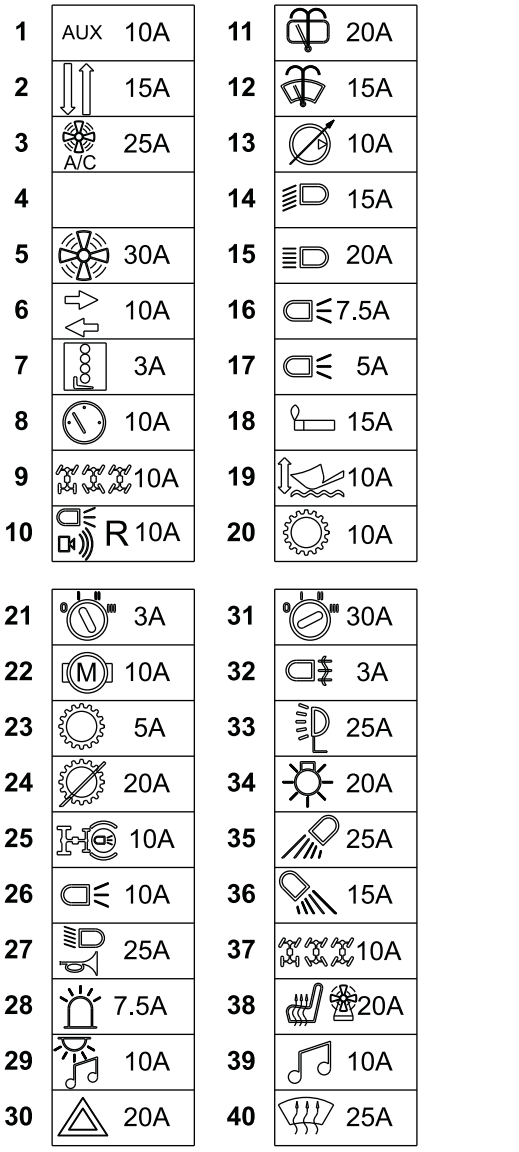


Fig 249.

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

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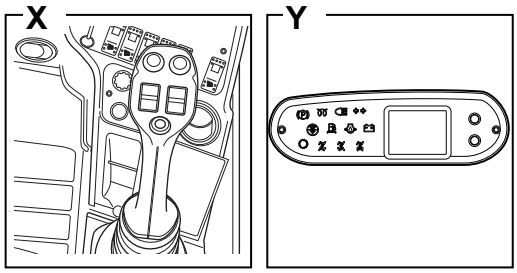
Table 23.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Air conditioning	25
4	Spare	10
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Steer control proximity switches. Transmission speed sensor	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Joystick control base unit	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Smooth Ride System (SRS)	10
20	Transmission F/N/R controller	20
21	Starter relay	3
22	Engine shut-off solenoid (ESOS)	10
23	Transmission	5
24	Transmission	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Steer mode controller	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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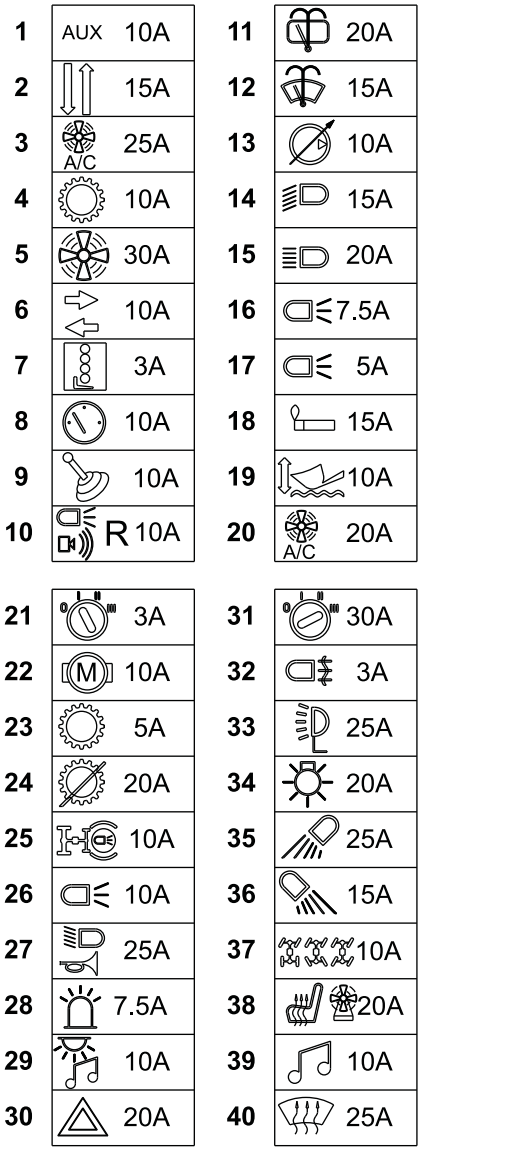
Machines with SE Engines and 4-Speed Transmission

This specification is only applicable to 4-speed machines with single lever cab mounted thumbwheel controls **X** and vehicle status screen **Y**. To aid identification, refer to the illustration for cab features.



C094300-C18

Fig 250.



817-D0914-1

Fig 251.

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

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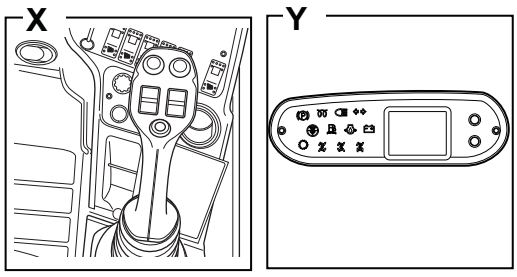
Table 24.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Air conditioning	25
4	Transmission F/N/R controller	10
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Joystick control base unit	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Smooth Ride System (SRS)	10
20	Air conditioning	20
21	Starter relay	3
22	Fuel pump	10
23	Transmission	5
24	Transmission	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Steer controller and proximity switches	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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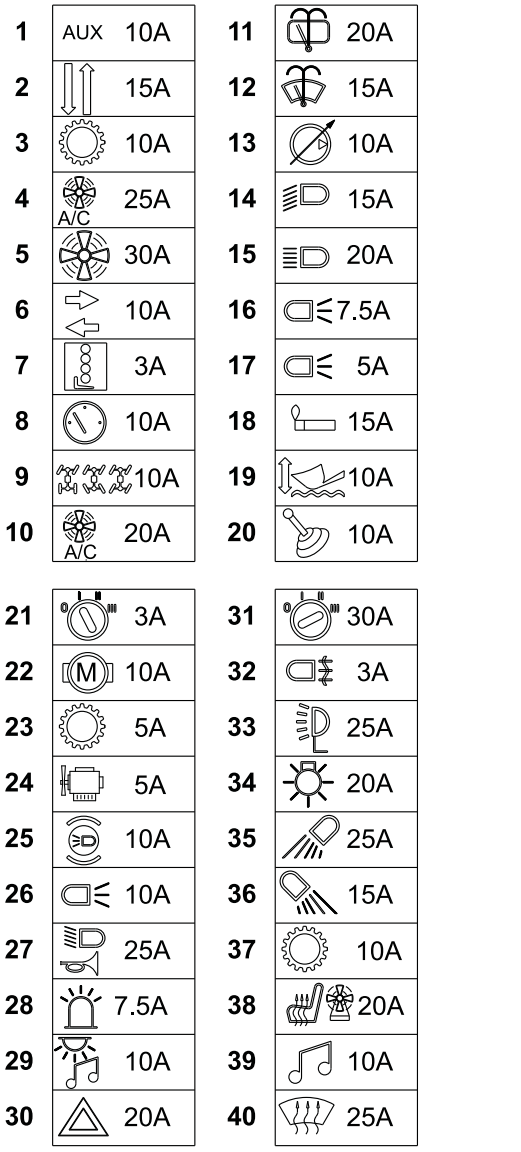
Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to 6-speed machines with single lever cab mounted thumbwheel controls **X** and vehicle status screen **Y**. To aid identification, refer to the illustration for cab features.



C094300-C19

Fig 252.



817-D1121-1

Fig 253.

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

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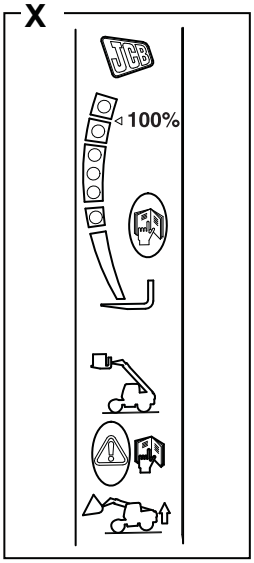
Table 25.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Transmission	10
4	Air conditioning	25
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Steer controller and proximity switches	10
10	Air conditioning	20
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Smooth Ride System (SRS)	10
20	Joystick control base unit	
21	Starter relay	3
22	Fuel pump	10
23	Transmission	5
24	Engine ECU	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Transmission	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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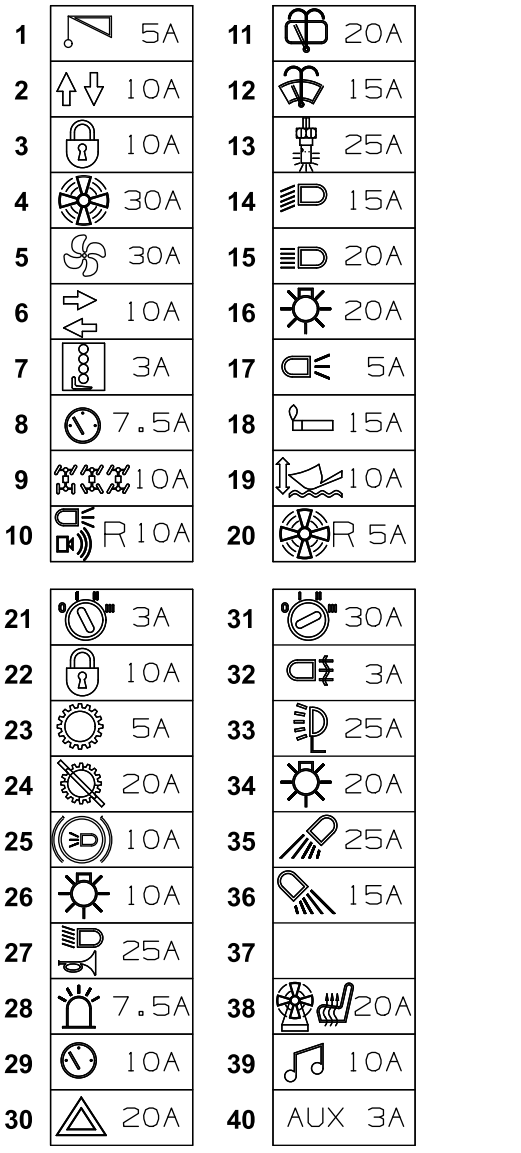
533-105, 540-140 with LLMC

This specification is only applicable to LLMC machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C13

Fig 254.



817-h2355-2-sheet1F

Fig 255.

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

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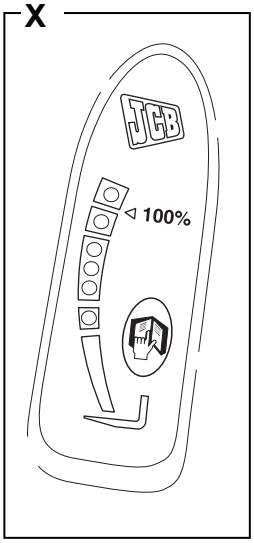
Table 26.

Fuse No.	Circuit	Rating (Amps)
1	Jib Interface	5
2	Auxiliary/Hitch Hydraulics	10
3	Immobiliser	10
4	Air Conditioning	30
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Cold Start	25
14	Dipped Beam	15
15	Main beam	20
16	Roadlights	20
17	Sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Reverse Fan	5
21	Ignition	3
22	Immobiliser	10
23	Transmission	5
24	Transmission Dump	20
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Instruments	10
30	Hazard lights	20
31	Neutral start	30
32	Foglights	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Spare	
38	Heated seat, face fan	20
39	Radio	10
40	Aux	3

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533-105, 540-140 without LLMC

This specification is only applicable to machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 256.

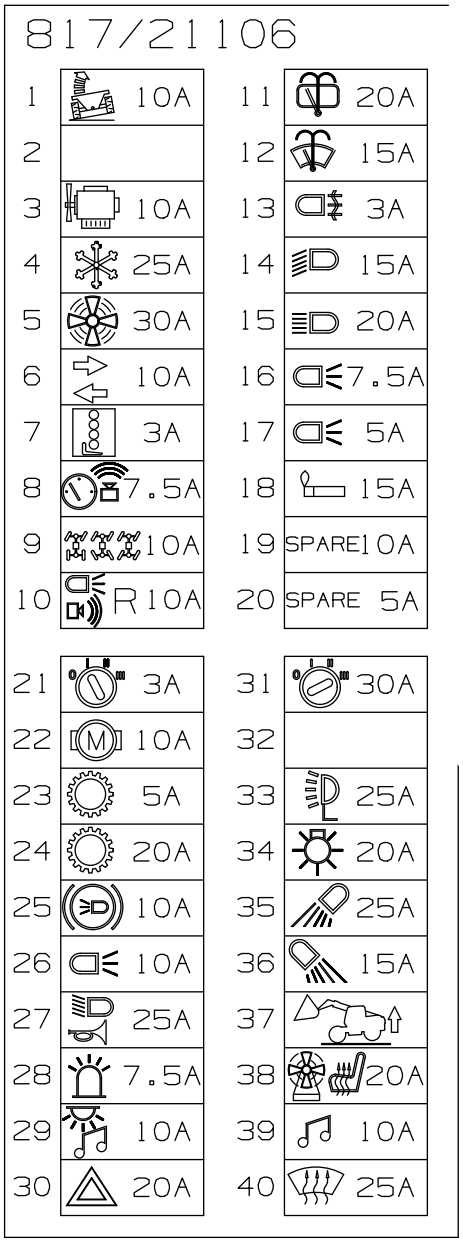


Fig 257.

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

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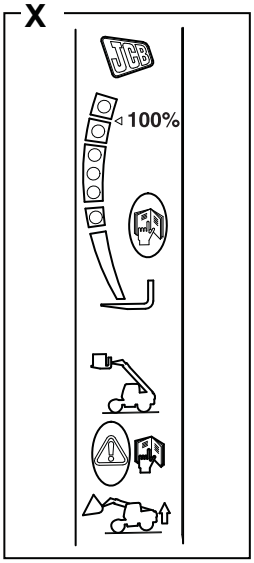
Table 27.

Fuse No.	Circuit	Rating (Amps)
1	Sway hydraulics	10
2	Spare	
3	Engine	10
4	Air-Conditioning	25
5	Heater	30
6	Indicators	10
7	LLMI	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Fog light	3
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Spare	
21	Starter relay	3
22	Fuel pump	10
23	Transmission	5
24	Transmission	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Spare	
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Spare	
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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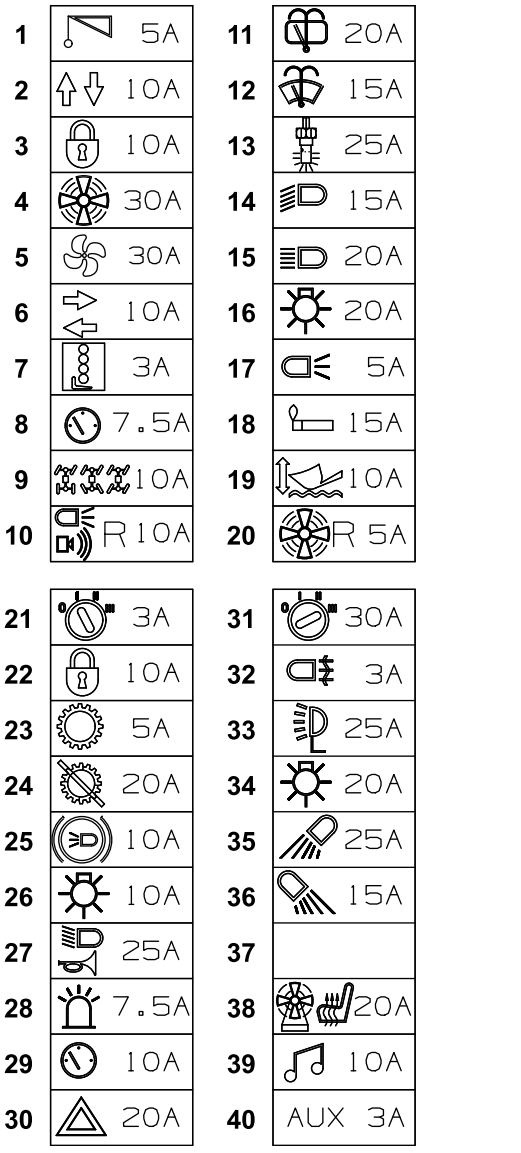
535-125 HiViz, 535-140 HiViz, 540-140 HiViz with LLMC

This specification is only applicable to LLMC machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C13

Fig 258.



817-h2355-2-sheet1F

Fig 259.

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

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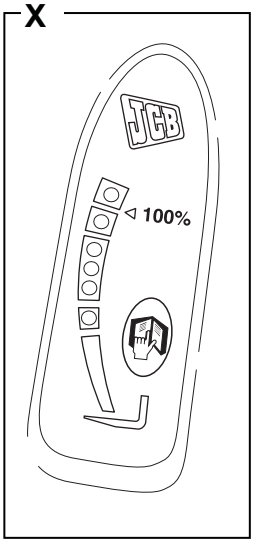
Table 28.

Fuse No.	Circuit	Rating (Amps)
1	Jib Interface	5
2	Auxiliary/Hitch Hydraulics	10
3	Immobiliser	10
4	Air Conditioning	30
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Cold Start	25
14	Dipped Beam	15
15	Main beam	20
16	Roadlights	20
17	Sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Reverse Fan	5
21	Ignition	3
22	Immobiliser	10
23	Transmission	5
24	Transmission Dump	20
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Instruments	10
30	Hazard lights	20
31	Neutral start	30
32	Foglights	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Spare	
38	Heated seat, face fan	20
39	Radio	10
40	Aux	3

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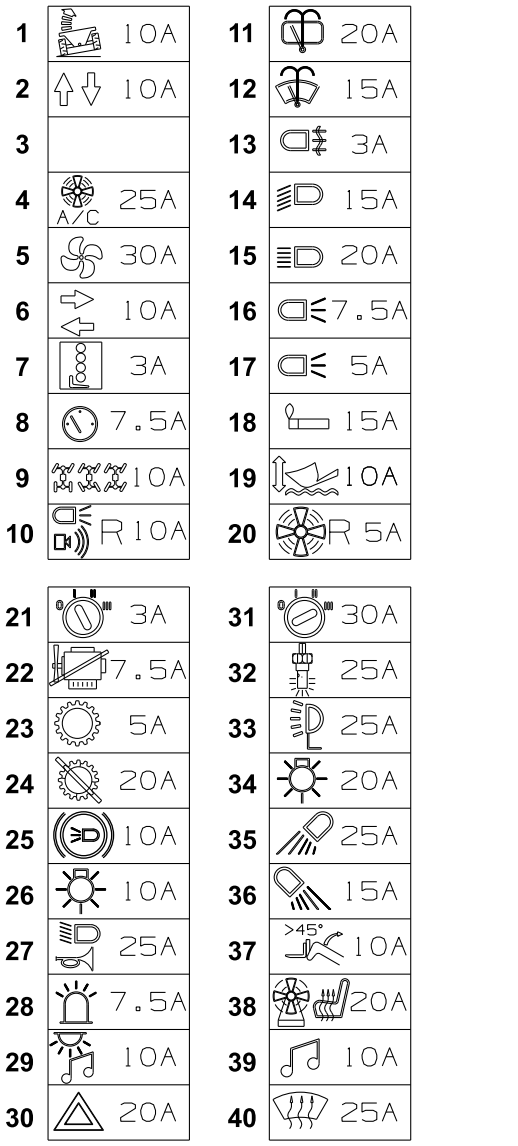
535-125 HiViz, 535-140 HiViz, 540-140 HiViz without LLMC

This specification is only applicable to machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 260.



817-H5564-1-SHEET1-F

Fig 261.

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

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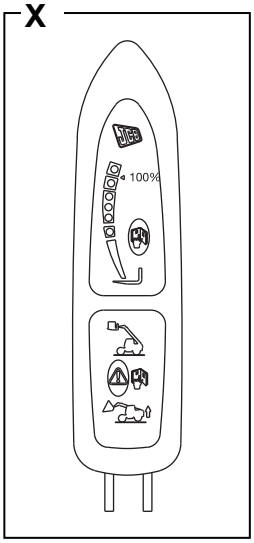
Table 29.

Fuse No.	Circuit	Rating (Amps)
1	Sway hydraulics	10
2	Auxiliary/Hitch hydraulics	10
3	Not Used	
4	Air Conditioning	25
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Fog Light	3
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Reverse Fan	10
21	Ignition	3
22	Engine shut-off solenoid (ESOS)	7.5
23	Transmission	5
24	Transmission Dump	20
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Cold Start	25
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Load Control System (if fitted)	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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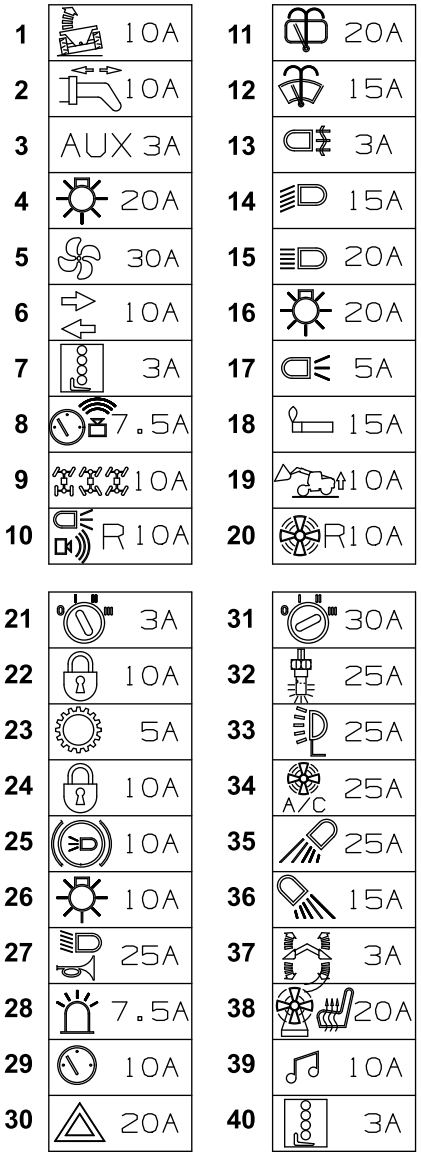
540-170 with LC4

This specification is only applicable to LC4 machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C15

Fig 262.



817-h5882-2-sheet1F

Fig 263.

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

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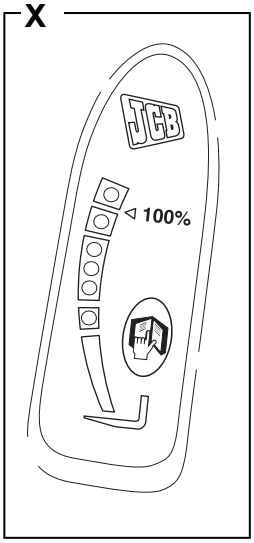
Table 30.

Fuse No.	Circuit	Rating (Amps)
1	Sway	10
2	Boom 4th Extension	10
3	Aux	3
4	Roadlights	20
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Fog light	3
14	Dipped Beam	15
15	Main beam	20
16	Roadlights	20
17	Sidelights	5
18	12 Volt accessory socket	15
19	Load Control (LC4)	10
20	Reverse Fan	10
21	Ignition	3
22	Immobiliser	10
23	Transmission	5
24	Immobiliser	10
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Instruments	10
30	Hazard lights	20
31	Neutral start	30
32	Cold Start	25
33	Boom worklight	25
34	Air Conditioning	25
35	Front worklamps	25
36	Rear worklamps	15
37	Stabilisers	3
38	Heated seat, face fan	20
39	Radio	10
40	Longitudinal Load Moment Indicator (LLMI)	3

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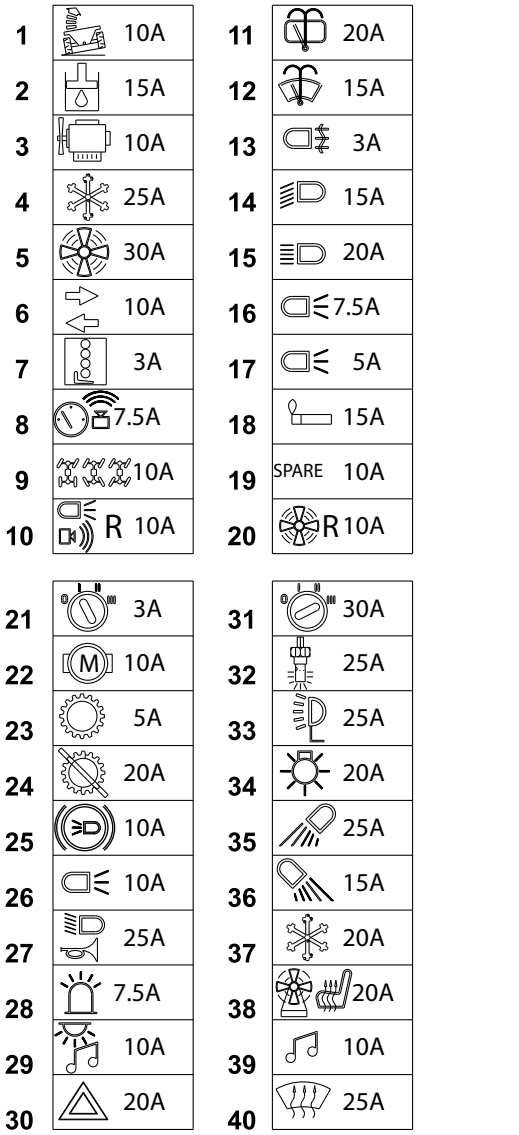
540-170 Without LC4

This specification is only applicable to LC4 machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 264.



332-f9414-1-sheet1-F

Fig 265.

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

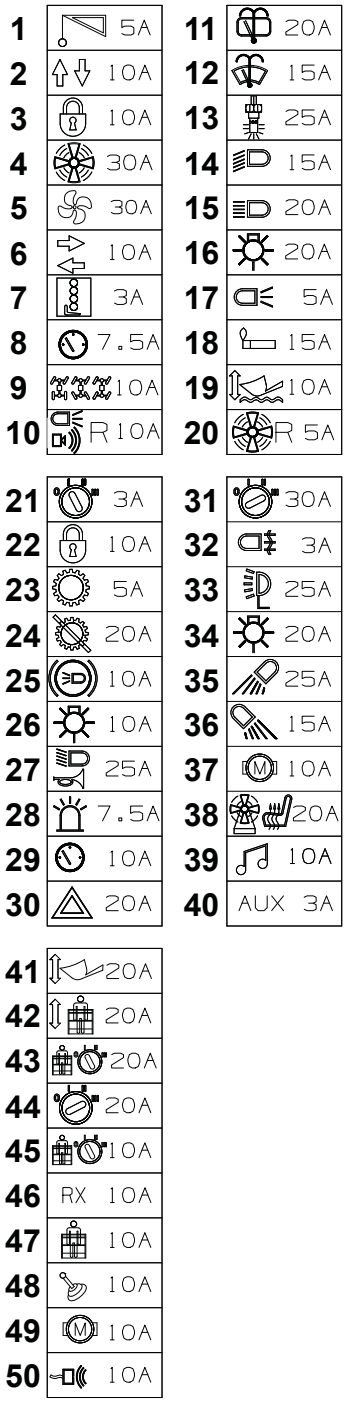
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Table 31.

Fuse No.	Circuit	Rating (Amps)
1	Sway	10
2	4th boom extension, Stabiliser leg unloader valve, Extension boost valve, Rotary isolation switch	15
3	Engine Running	10
4	Air-Conditioning	25
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Fog light	3
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Reverse Fan	10
21	Ignition	3
22	Fuel pump	10
23	Transmission	5
24	Transmission Dump	20
25	Brake lights	10
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Cold Start	25
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Air-Conditioning	20
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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540-200



333-g8880-1-sheet 1

Fig 266.

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

Table 32.

Fuse No.	Circuit	Rating (Amps)
1	Jib Interface	5
2	Auxiliary/Hitch Hydraulics	10
3	Immobiliser	10
4	Air Conditioning	30
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	7.5
9	Steer mode selector	10
10	Reversing alarm/lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Cold Start	25
14	Dipped Beam	15
15	Main beam	20
16	Roadlights	20
17	Sidelights	5
18	12 Volt accessory socket	15
19	Spare	
20	Reverse Fan	5
21	Ignition	3
22	Immobiliser	10
23	Transmission	5
24	Transmission Dump	20
25	Brake lights	10
26	Roadlights	10
27	Headlight flasher, horn	25
28	Beacon	7.5
29	Instruments	10
30	Hazard lights	20
31	Neutral start	30
32	Foglights	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Spare	
38	Heated seat, face fan	20
39	Radio	10
40	Aux	3
41	Hydraulic ECU	20
42	Workplatform ECU	20

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Fuse No.	Circuit	Rating (Amps)
43	Workplatform Ignition	20
44	Workplatform Start	20
45	2nd Workplatform Ignition	10
46	Radio Receiver	10
47	Basket Controls	10
48	Joystick Control Base Unit	10
49	Recovery Pump	10
50	External Audible Alarm	10

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550/560-80

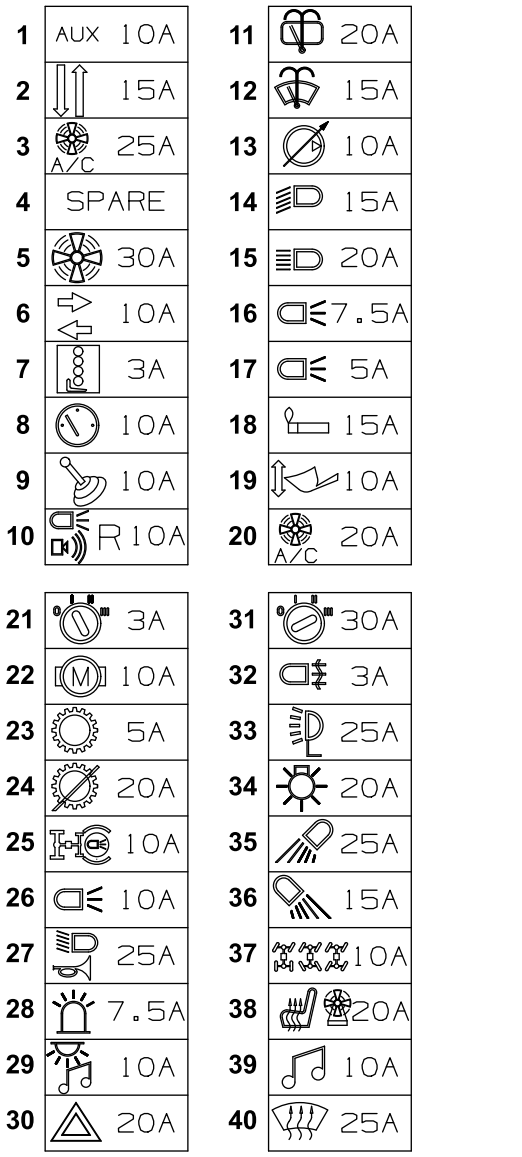


Fig 267.

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

Table 33.

Fuse No.	Circuit	Rating (Amps)
1	Auxiliary	10
2	Auxiliary/Hitch hydraulics	15
3	Air conditioning	25
4	Spare	
5	Heater	30
6	Indicators	10
7	Longitudinal Load Moment Indicator (LLMI)	3
8	Instruments	10
9	Joystick control base unit	10
10	Reversing alarm/Lights	10
11	Rear/roof Wiper	20
12	Front wiper	15
13	Hydraulic Variflow Controller (HVCS)	10
14	Dipped Beam	15
15	Main beam	20
16	Left hand sidelights	7.5
17	Right hand sidelights	5
18	12 Volt accessory socket	15
19	TBA	
20	Air Conditioning	20
21	Ignition	3
22	Fuel pump	10
23	Transmission	5
24	Transmission Dump	20
25	TBA	
26	Side lights	10
27	Headlight flasher, horn	25
28	Beacon	10
29	Interior light, radio	10
30	Hazard lights	20
31	Neutral start	30
32	Fog Light	3
33	Boom worklight	25
34	Roadlights	20
35	Front worklamps	25
36	Rear worklamps	15
37	Steer Mode Selector	10
38	Heated seat, face fan	20
39	Radio	10
40	Heated windows	25

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Primary Fuses

To further protect the machine wiring harnesses and electrical circuits, a fuse link box is fitted as shown. Remember to check the main circuit fuses as well as the primary fuses shown on this page.

Note: *Your machine may not be equipped with all the fuses shown.*

Table 34.

Fuse No.	Circuit	Rating (Amps)
1	Horn, Sidelights, Hazard warning lights, Beacon, Interior light	50
2	Road lights, Working lights, Boom light	80
3	Sway, Auxiliary, Heater	60
4	SRS, Starting circuit, Transmission, Brake lights	70
5	LLMI, Heater, Wipers, Radio, Instruments	60
6	Seat, Electric mirrors, Heated glass	60
7	Engine	30
8	Hydraulic control ECU	10
9	Engine ECU power-up	20
10	Fuel pump	5
11	Cold start grid heater(1)	150

(1) The fuse is located to the left hand side of the engine, at the rear of the engine compartment. Remove two nuts to release the fuse.

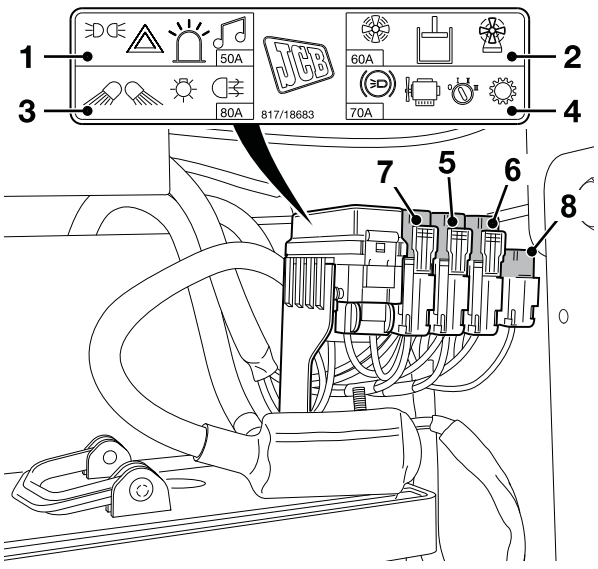
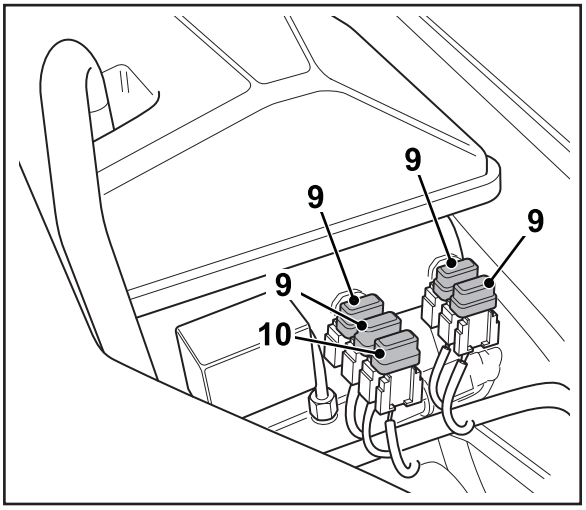


Fig 268. Battery Positive Terminal



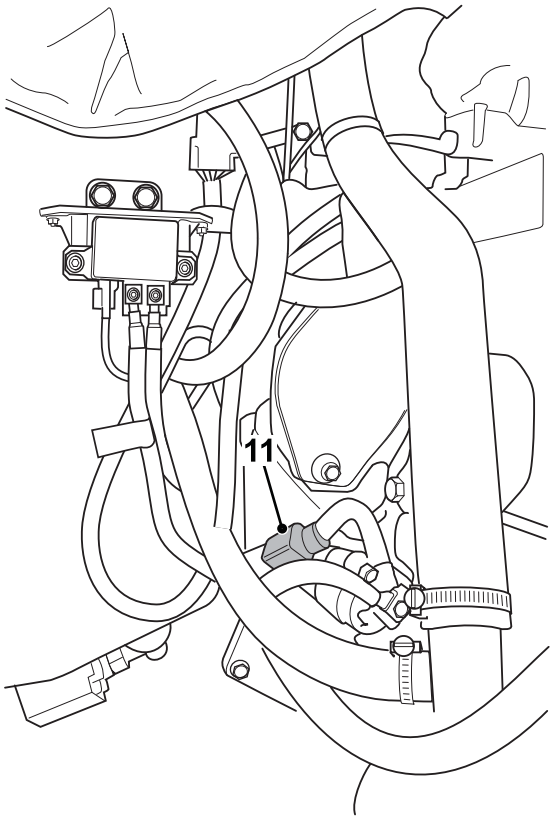


Fig 269. Engine Compartment

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Relays

Introduction

P5-3026

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 aid identification.

To get access to the relays:

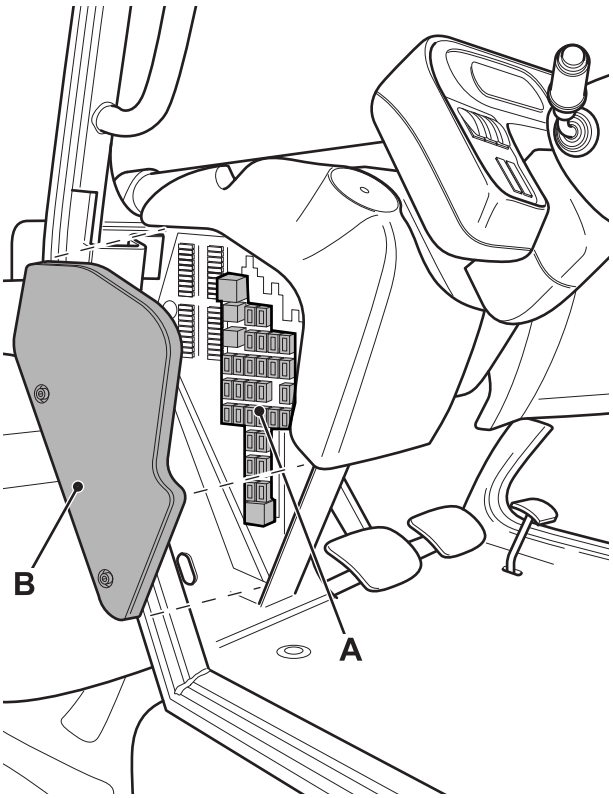
1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.

2 Open the cab door.

3 Hold the cover **B** then remove the two screws.

4 Remove the cover **B**.

Note: *Machines with the seat mounted single lever control are fitted with additional relays. The relays are located within the control pod. Refer to* ***Additional Relays (if fitted)****.*



810830-5

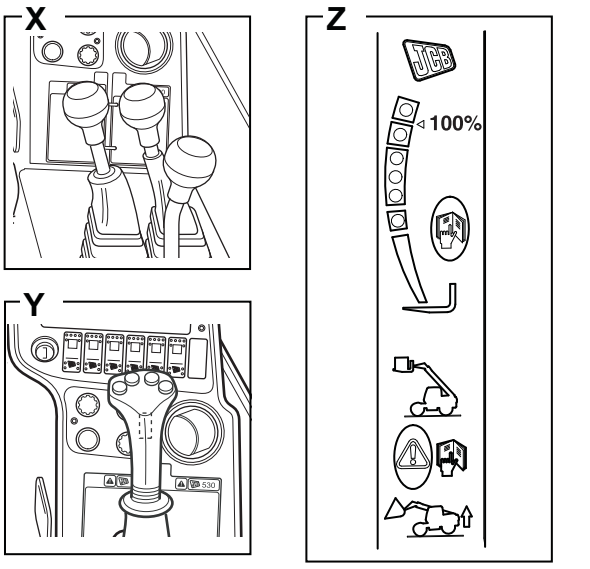
Fig 270.

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531-70, 535-95, 536-60, 536-70, 541-70

LLMC Machines with SD, SE, SF Engines and 4-Speed Transmission

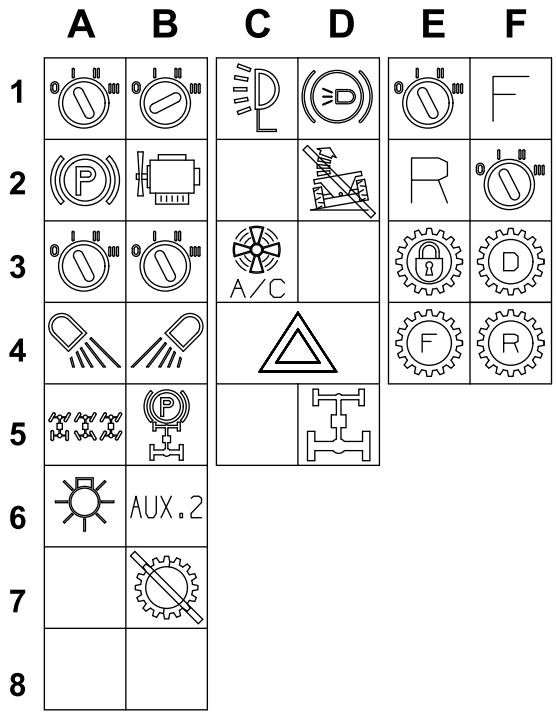
This specification is only applicable to machines with dual lever controls **X** and single lever push button controls **Y**. LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.



C094300-C4

Fig 271.

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



817-h2349-3-sheet1R

Fig 272.

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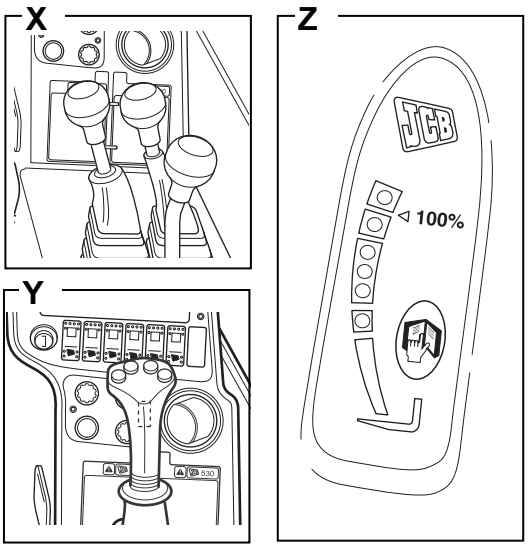
Table 35.

Relay No.	Circuit
A1	Ignition
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear worklights
A5	Steer mode
A6	Roadlights
A7	Not Used
A8	Not Used
B1	Neutral start
B2	Engine running
B3	Ignition
B4	Front worklights
B5	2WD Brake
B6	2nd Auxiliary
B7	Transmission Dump
B8	Not Used
C1	Boom worklight
C2	Not Used
C3	Air conditioning
C4	Flasher unit
C5	Not Used
D1	Brake Lights
D2	Sway Isolation
D3	Not Used
D4	Flasher unit
D5	2WD
E1	Ignition
E2	Reverse
E3	Drive
E4	Forward high/low
F1	Forward
F2	Ignition
F3	Driveshaft
F4	Reverse high/low

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Non LLMC Machines with SD, SE, SF Engines and 4-Speed Transmission

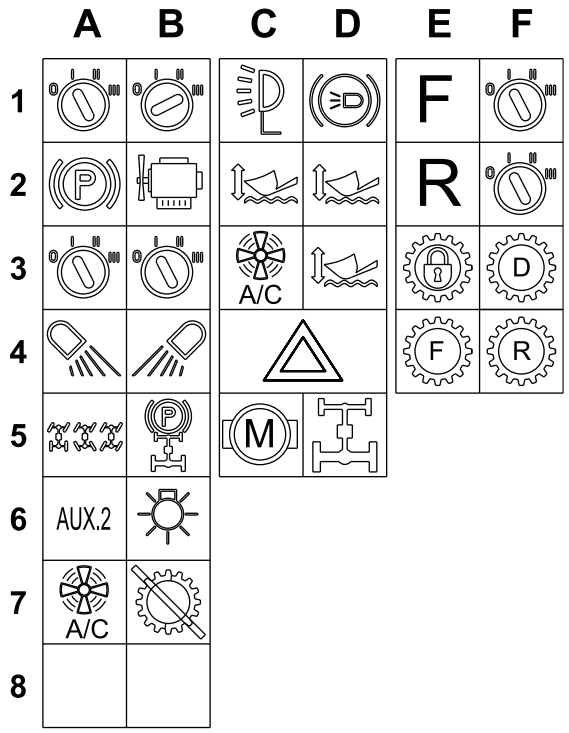
This specification is only applicable to machines with dual lever controls **X** and single lever push button controls **Y**. Non LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.



C094300-C5

Fig 273.

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



332-E7709-3(R)-C1

Fig 274.

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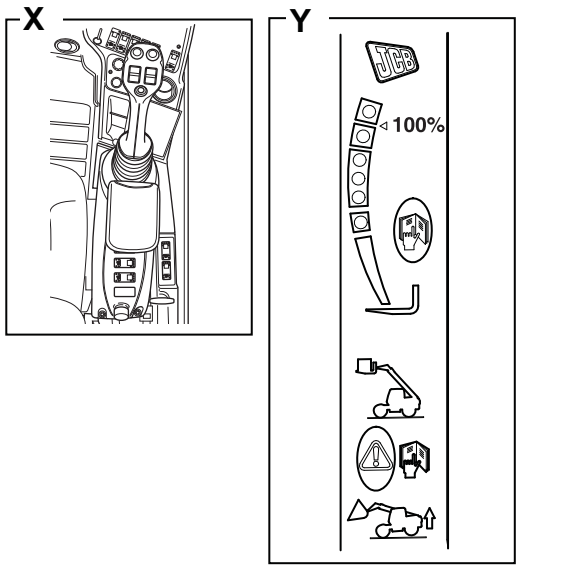
Table 36.

Relay No.	Circuit
A1	Ignition 1
A2	Parkbrake Warning Light
A3	Ignition 3
A4	Rear worklights
A5	Steer mode
A6	2nd auxiliary (Aux 2)
A7	Air conditioning
A8	
B1	Neutral start
B2	Engine running
B3	Ignition 4
B4	Front worklights
B5	2WD Brake
B6	Roadlights
B7	Transmission Dump
B8	
C1	Boom worklight
C2	Smooth Ride System (SRS)
C3	Air conditioning
C4	Flasher unit
C5	Fuel Pump
D1	Brake Lights
D2	Smooth Ride System (SRS)
D3	Smooth Ride System (SRS)
D4	Flasher unit
D5	2WD
E1	Forward
E2	Reverse
E3	Drive
E4	Forward high/low
F1	Ignition 1
F2	Ignition 2
F3	Driveshaft
F4	Reverse high/low

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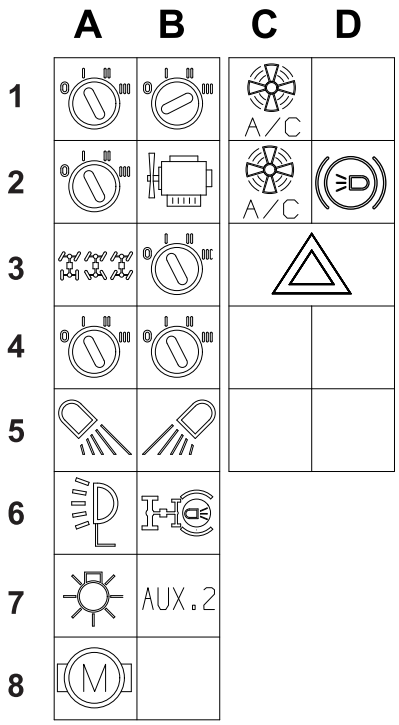
LLMC Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to machines with single lever seat pod mounted controls **X**. LLMC machines have the display shown at **Y**.To aid identification, refer to the illustration for cab features.



C094300-C6

Fig 275.



817-h2345-3-sheet1R

Fig 276.

Table 37.

Relay No.	Circuit
A1	Ignition
A2	Ignition
A3	Steer Mode
A4	Ignition
A5	Rear Worklights
A6	Boom worklight
A7	Roadlights
A8	Fuel Pump
B1	Neutral start
B2	Engine running
B3	Ignition
B4	Ignition
B5	Front Worklights
B6	2WD Brake
B7	2nd auxiliary (Aux 2)
B8	Not Used
C1	Air conditioning
C2	Air conditioning
C3	Flasher unit
C4	Not Used
C5	Not Used
D1	Not Used
D2	Brake Lights
D3	Flasher unit
D4	Not Used
D5	Not Used

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

Note: *Additional relays are installed in the seat mounted control pod, refer to next page for details.*⇨ ***Table 38. Additional Pod Mounted Relay (*** 282)

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Table 38. Additional Pod Mounted Relay

Relay No.	Circuit
1	Transmission Dump Relay

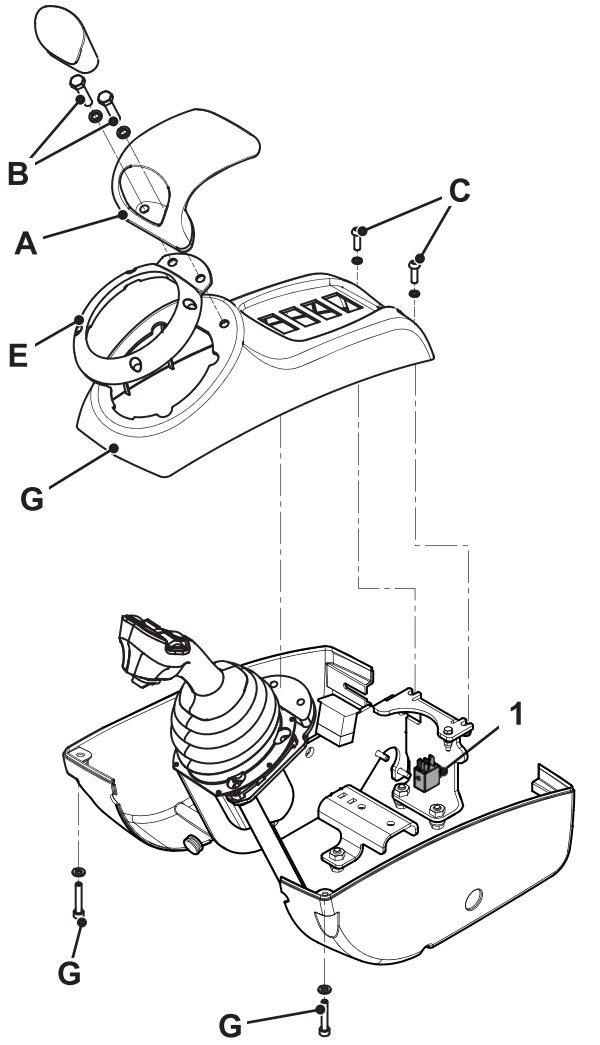


Fig 277.

Removal

1 Isolate the electrics.

2 Prise the screw cover from the armrest **A** and remove the screws and washers **B**. Lift away the armrest.

3 Remove rear screws and washers **C**.

4 Remove front screws and washers **D**.

5 Remove the gaiter collar **E**.

6 Remove the pod top cover **G** until access can be gained to the relay.

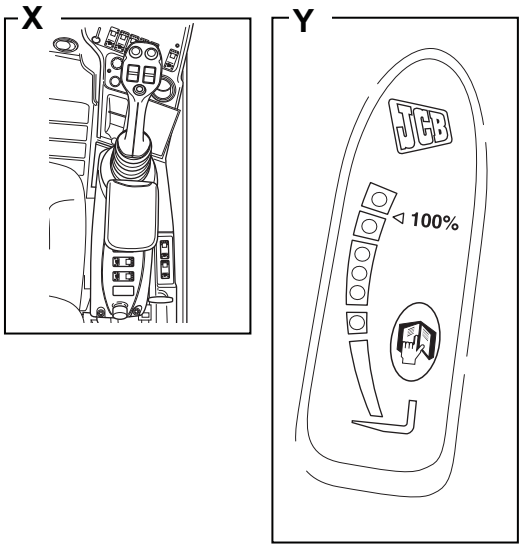
Replacement

Replacement is the opposite of the removal procedure.

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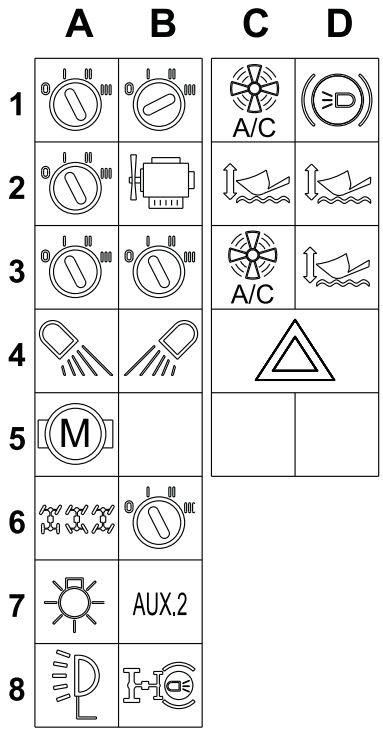
Non LLMC Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to machines with single lever seat pod mounted controls **X**. Non LLMC machines have the display shown at **Y**.To aid identification, refer to the illustration for cab features.



C094300-C7

Fig 278.



332-E7740-3(R)-C1

Fig 279.

Table 39.

Relay No.	Circuit
A1	Ignition 1
A2	Ignition 2
A3	Ignition 3
A4	Rear worklights
A5	Fuel pump
A6	Steer mode
A7	Roadlights
A8	Boom worklight
B1	Neutral start
B2	Engine running
B3	Ignition 4
B4	Front worklights
B5	
B6	Ignition 5
B7	2nd auxiliary (Aux 2)
B8	2WD Brake
C1	Air conditioning
C2	Smooth Ride System (SRS)
C3	Air conditioning
C4	Flasher unit
C5	
D1	Brake Lights
D2	Smooth Ride System (SRS)
D3	Smooth Ride System (SRS)
D4	Flasher unit
D5	

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

Note: *Additional relays are installed in the seat mounted control pod, refer to next page for details.* ⇨ ***Table 38. Additional Pod Mounted Relay (*** 282)

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Table 40. Additional Pod Mounted Relays

Relay No.	Circuit
1	Smooth Ride System (SRS) Crowd/Dump signal
2	Smooth Ride System (SRS) Lift signal
3	Hydraulic servo system enable

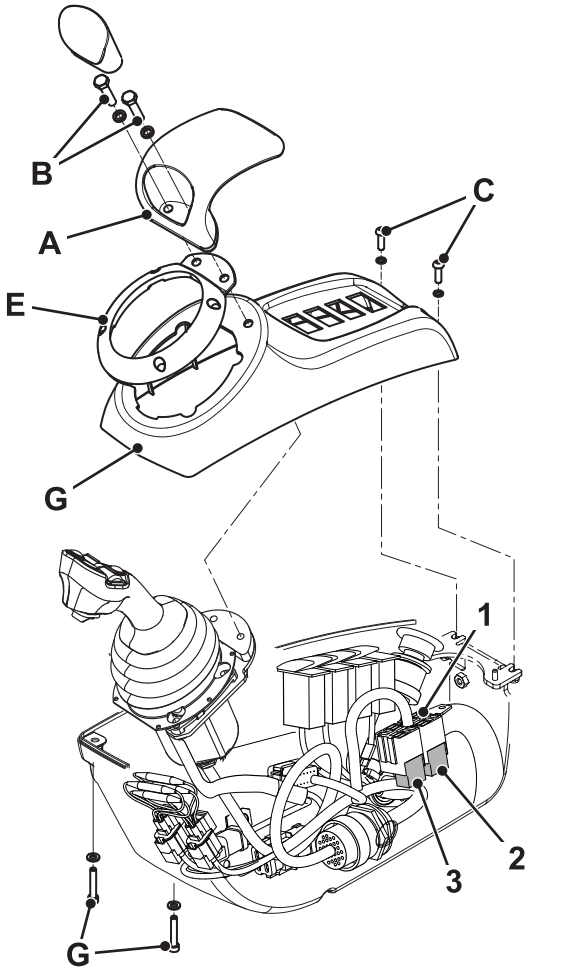


Fig 280.

Removal

1 Isolate the electrics.

2 Prise the screw cover from the armrest **A** and remove the screws and washers **B**. Lift away the armrest.

3 Remove rear screws and washers **C**.

4 Remove front screws and washers **D**.

5 Remove the gaiter collar **E**.

6 Remove the pod top cover **G** until access can be gained to the relays.

Replacement

Replacement is the opposite of the removal procedure.

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Non LLMC Machines with SF Engines and 4-Speed Transmission

This specification is only applicable to machines with single lever cab mounted thumbwheel controls **X** and centre warning light cluster **Y**. Non LLMC machines have the display shown at **Z**. To aid identification, refer to the illustration for cab features.

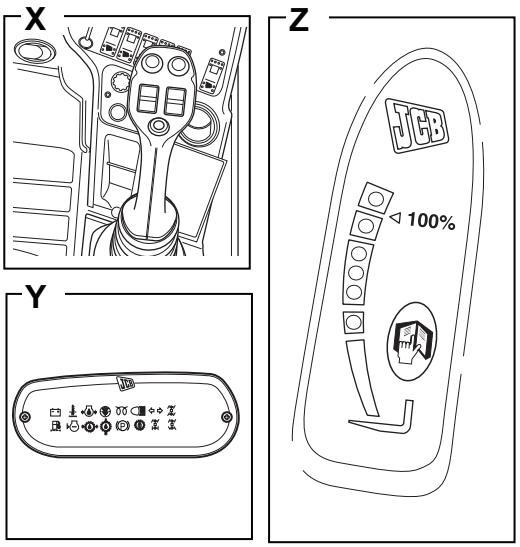


Fig 281.

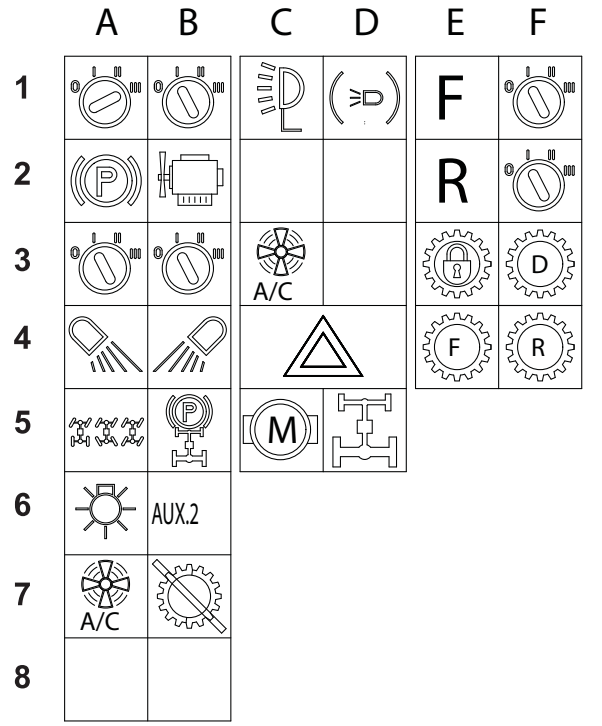


Fig 282.

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

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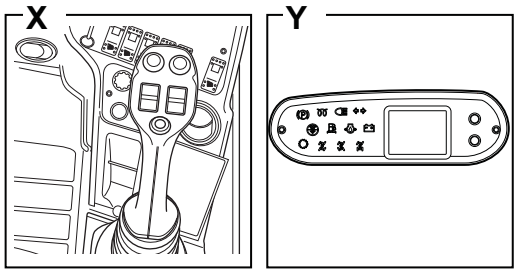
Table 41.

Relay No.	Circuit
A1	Neutral start
A2	Parkbrake
A3	Ignition relay 4
A4	Rear worklights
A5	Steer mode
A6	Roadlights
A7	Blank
A8	Blank
B1	Ignition relay
B2	Engine running
B3	Ignition relay 3
B4	Front worklights
B5	2WD park brake
B6	Auxiliary 2
B7	Transmission dump
B8	Blank
C1	Boom worklight
C2	Blank
C3	Roof air conditioning fans
C4	Flasher unit
C5	Blank
D1	Brake lights
D2	Blank
D3	Blank
D4	Flasher unit
D5	2WD
E1	Forward drive
E2	Reverse drive
E3	Driveshaft
E4	Forward high/low
F1	Ignition relay 1
F2	Ignition relay 2
F3	Drive
F4	Reverse high/low

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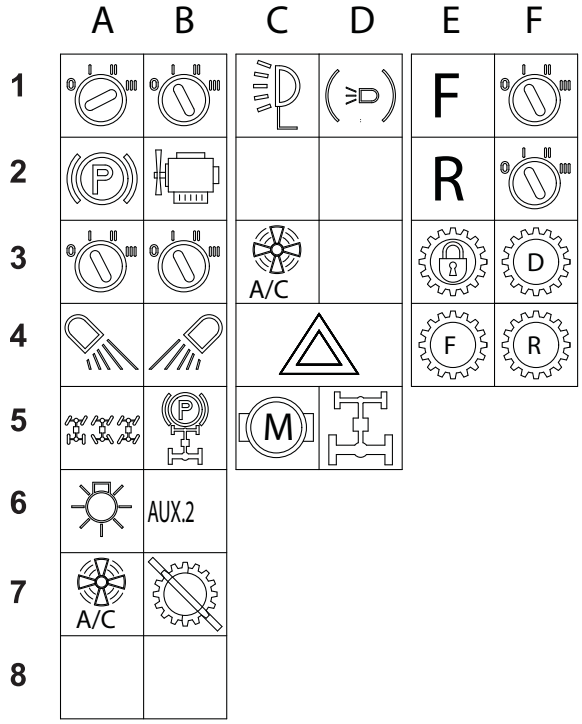
Machines with SE Engines and 4-Speed Transmission

This specification is only applicable to 4-speed machines with single lever cab mounted thumbwheel controls **X** and vehicle status screen **Y**. To aid identification, refer to the illustration for cab features.



C094300-C18

Fig 283.



817-D0914-1B

Fig 284.

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

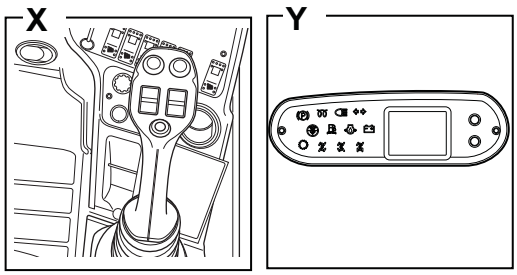
Table 42.

Relay No.	Circuit
A1	Neutral start
A2	Parkbrake
A3	Ignition relay 4
A4	Rear worklights
A5	Steer mode
A6	Roadlights
A7	Roof air conditioning fan 1
A8	Blank
B1	Ignition relay
B2	Engine running
B3	Ignition relay 3
B4	Front worklights
B5	2WD park brake
B6	Auxiliary 2
B7	Transmission dump
B8	Blank
C1	Boom worklight
C2	Blank
C3	Roof air conditioning fan 2
C4	Flasher unit
C5	Fuel pump
D1	Brake lights
D2	Blank
D3	Blank
D4	Flasher unit
D5	2WD
E1	Forward drive
E2	Reverse drive
E3	Driveshaft
E4	Forward high/low
F1	Ignition relay 1
F2	Ignition relay 2
F3	Drive
F4	Reverse high/low

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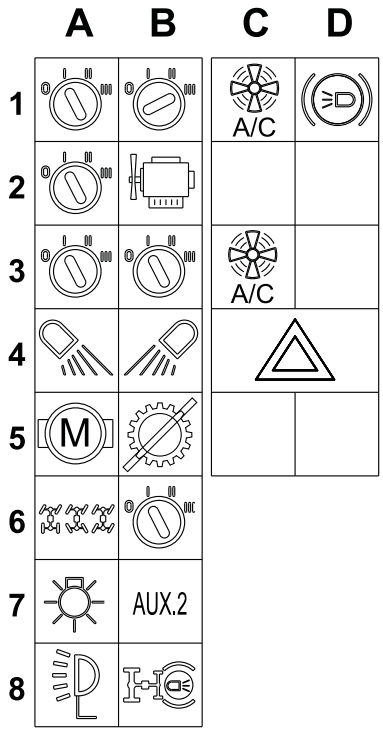
Machines with SE Engines and 6-Speed Transmission

This specification is only applicable to 6-speed machines with single lever cab mounted thumbwheel controls **X** and vehicle status screen **Y**. To aid identification, refer to the illustration for cab features.



C094300-C19

Fig 285.



817-D1121-1-B

Fig 286.

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

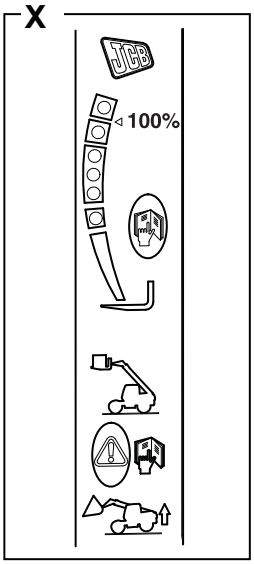
Table 43.

Relay No.	Circuit
A1	Ignition 1
A2	Ignition 2
A3	Ignition 3
A4	Rear worklights
A5	Fuel pump
A6	Steer mode
A7	Roadlights
A8	Boom worklight
B1	Neutral start
B2	Engine running
B3	Ignition 4
B4	Front worklights
B5	Transmission dump
B6	Ignition 5
B7	2nd auxiliary (Aux 2)
B8	2WD Brake
C1	Air conditioning
C2	Blank
C3	Air conditioning
C4	Flasher unit
C5	Blank
D1	Brake Lights
D2	Blank
D3	Blank
D4	Flasher unit
D5	Blank

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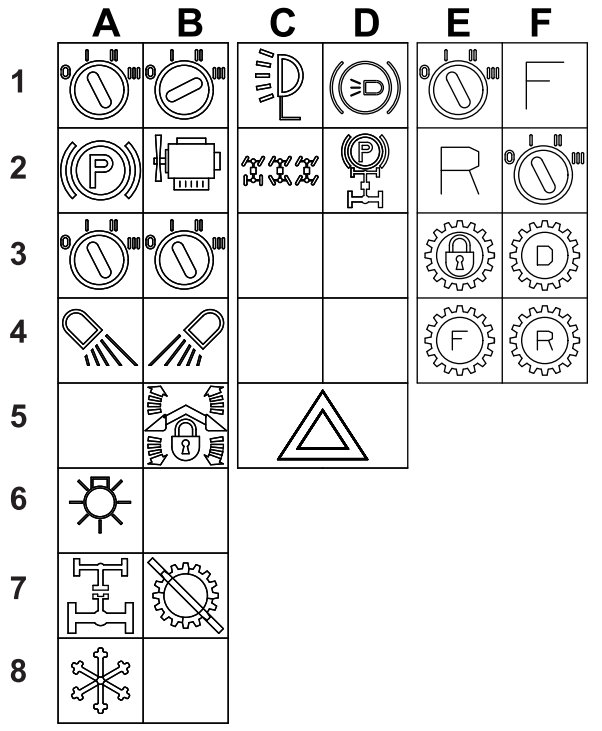
533-105, 540-140 with LLMC

This specification is only applicable to LLMC machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C13

Fig 287.



817-h2355-2-sheet1R

Fig 288.

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

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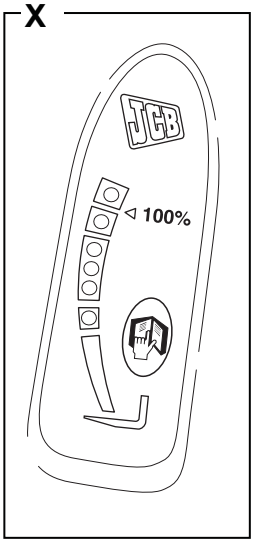
Table 44.

Relay No.	Circuit
A1	Ignition
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear Worklights
A5	Not Used
A6	Roadlights
A7	2WD
A8	Air Conditioning
B1	Neutral Start
B2	Engine Running
B3	Ignition
B4	Front Worklights
B5	Stabiliser Isolation
B6	Not Used
B7	Transmission Dump
B8	Not Used
C1	Boom Worklight
C2	Steer Mode
C3	Not Used
C4	Not Used
C5	Flasher Unit
D1	Brake Lights
D2	2WD Parkbrake
D3	Not Used
D4	Not Used
D5	Flasher Unit
E1	Ignition
E2	Reverse Drive
E3	Drive
E4	Forward High/Low
F1	Forward Drive
F2	Ignition
F3	Driveshaft
F4	Reverse High/Low

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533-105, 540-140 without LLMC

This specification is only applicable to machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 289.

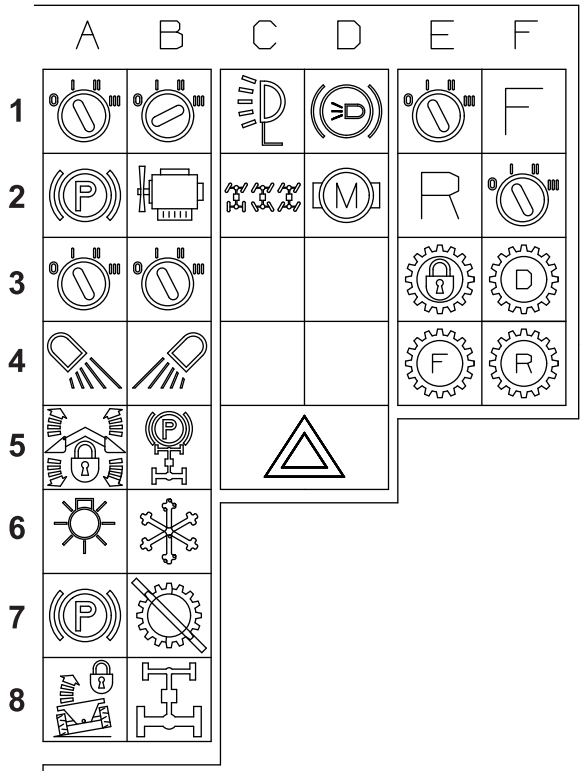


Fig 290.

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

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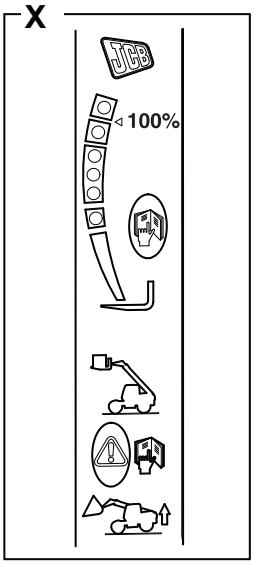
Table 45.

Relay No.	Circuit
A1	Neutral start
A2	Parkbrake
A3	Ignition relay 3
A4	Rear worklights
A5	Stabiliser isolation (raise/lower)
A6	Roadlights
A7	Parkbrake warning light
A8	Sway isolation
B1	Neutral start
B2	Engine running
B3	Ignition relay 4
B4	Front worklights
B5	2WD park brake
B6	Air conditioning
B7	Transmission dump
B8	2WD
C1	Boom worklight
C2	Steer mode
C3	Blank
C4	Blank
C5	Flasher unit
D1	Brake lights
D2	Fuel pump
D3	Blank
D4	Blank
D5	Flasher unit
E1	Ignition relay 1
E2	Reverse drive
E3	Drive
E4	Forward high/low
F1	Forward drive
F2	Ignition relay 2
F3	Driveshaft
F4	Reverse high/low
X	Flasher unit

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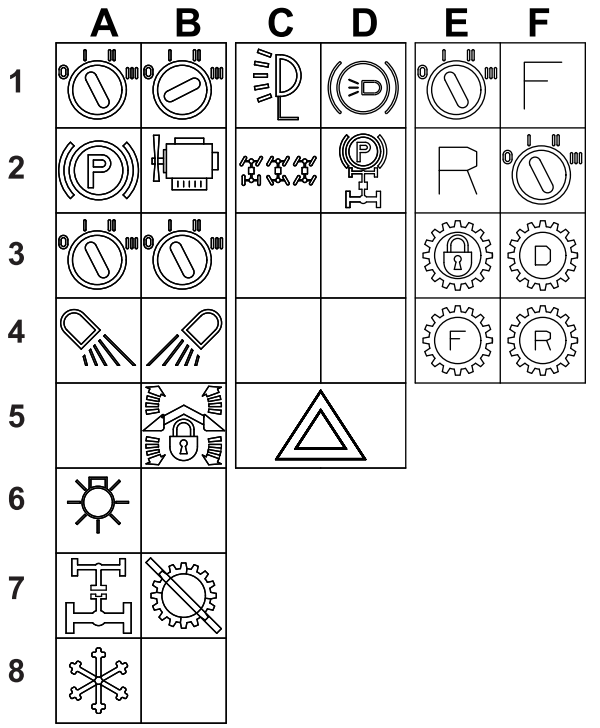
535-125 HiViz, 535-140 HiViz, 540-140 HiViz with LLMC

This specification is only applicable to LLMC machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C13

Fig 291.



817-h2355-2-sheet1R

Fig 292.

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

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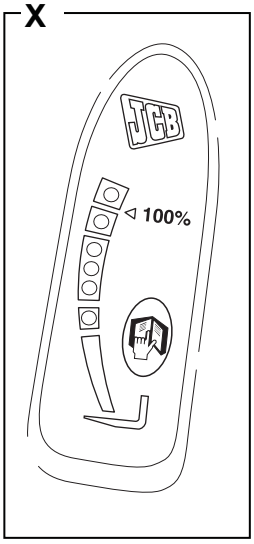
Table 46.

Relay No.	Circuit
A1	Ignition
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear Worklights
A5	Not Used
A6	Roadlights
A7	2WD
A8	Air Conditioning
B1	Neutral Start
B2	Engine Running
B3	Ignition
B4	Front Worklights
B5	Stabiliser Isolation
B6	Not Used
B7	Transmission Dump
B8	Not Used
C1	Boom Worklight
C2	Steer Mode
C3	Not Used
C4	Not Used
C5	Flasher Unit
D1	Brake Lights
D2	2WD Parkbrake
D3	Not Used
D4	Not Used
D5	Flasher Unit
E1	Ignition
E2	Reverse Drive
E3	Drive
E4	Forward High/Low
F1	Forward Drive
F2	Ignition
F3	Driveshaft
F4	Reverse High/Low

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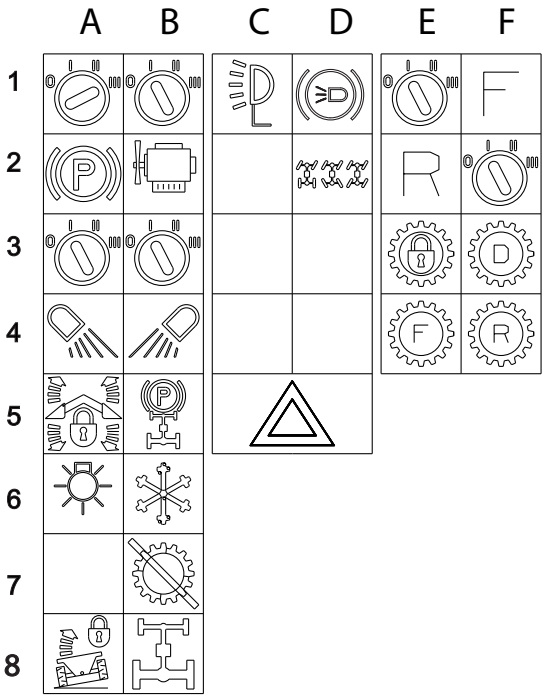
535-125 HiViz, 535-140 HiViz, 540-140 HiViz Without LLMC

This specification is only applicable to machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 293.



817-H5564-1-SHEET1-R.eps

Fig 294.

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

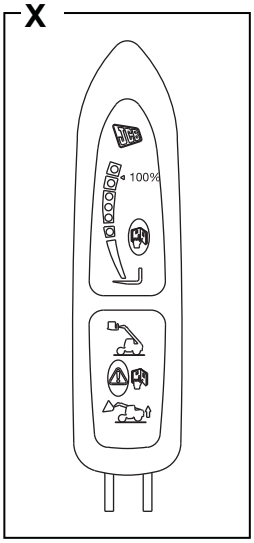
Table 47.

Relay No.	Circuit
A1	Neutral Start
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear Worklights
A5	Stabiliser Isolation
A6	Roadlights
A7	Not Used
A8	Sway Isolation
B1	Ignition
B2	Engine Running
B3	Ignition
B4	Front Worklights
B5	2WD Parkbrake
B6	Air Conditioning
B7	Transmission Dump
B8	2WD
C1	Boom Worklight
C2	Not Used
C3	Not Used
C4	Not Used
C5	Flasher Unit
D1	Brake Lights
D2	Steer Mode
D3	Not Used
D4	Not Used
D5	Flasher Unit
E1	Ignition
E2	Reverse Drive
E3	Drive
E4	Forward High/Low
F1	Forward Drive
F2	Ignition
F3	Driveshaft
F4	Reverse High/Low

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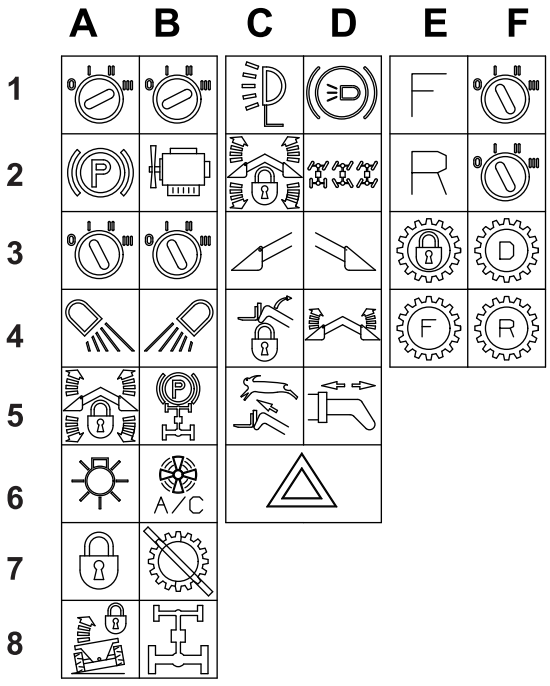
540-170 with LC4

This specification is only applicable to LC4 machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C15

Fig 295.



817-h5882-2-sheet1R

Fig 296.

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

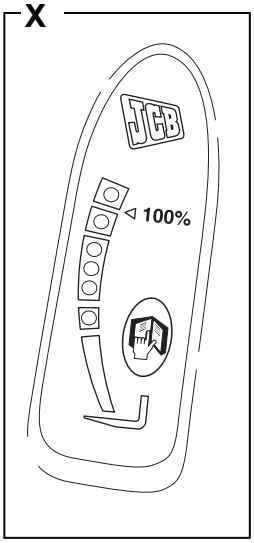
Table 48.

Relay No.	Circuit
A1	Neutral start
A2	Parkbrake
A3	Ignition
A4	Rear worklights
A5	Stabiliser isolation (raise/lower)
A6	Roadlights
A7	Immobiliser
A8	Sway isolation
B1	Neutral start
B2	Engine running
B3	Ignition
B4	Front worklights
B5	2WD brake
B6	Air Conditioning
B7	Transmission dump
B8	2WD
C1	Boom worklight
C2	Stabiliser isolation (raise/lower)
C3	Left hand stabiliser
C4	Lift isolation
C5	Extension boost
C6	Flasher Unit
D1	Brake lights
D2	Steer Mode
D3	Right hand stabiliser
D4	Stabiliser lift unloader
D5	4th boom extension
D6	Flasher Unit
E1	Forward Drive
E2	Reverse drive
E3	Drive
E4	Forward high/low
F1	Ignition
F2	Ignition
F3	Driveshaft
F4	Reverse high/low

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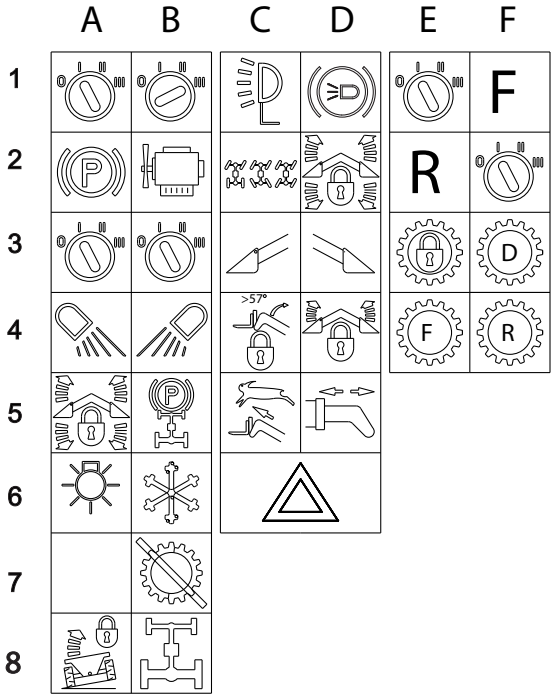
540-170 without LC4

This specification is only applicable to LC4 machines with the display shown at **X**. To aid identification, refer to the illustration for cab features.



C094300-C14

Fig 297.



332-f9414-1-sheet1-R

Fig 298.

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

Table 49.

Relay No.	Circuit
A1	Ignition
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear worklights
A5	Stabiliser isolation (raise/lower)
A6	Roadlights
A7	Not Used
A8	Sway isolation
B1	Neutral start
B2	Engine running
B3	Ignition
B4	Front worklights
B5	2WD brake
B6	Air conditioning
B7	Transmission dump
B8	2WD
C1	Boom worklight
C2	Steer mode
C3	Left hand stabiliser
C4	Lift isolation
C5	Extension boost
C6	Flasher unit
D1	Brake lights
D2	Stabiliser isolation (raise/lower)
D3	Right hand stabiliser
D4	Stabiliser lift unloader
D5	4th boom extension
D6	Flasher unit
E1	Ignition
E2	Reverse drive
E3	Drive
E4	Forward high/low
F1	Forward drive
F2	Ignition
F3	Driveshaft
F4	Reverse high/low

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540-200

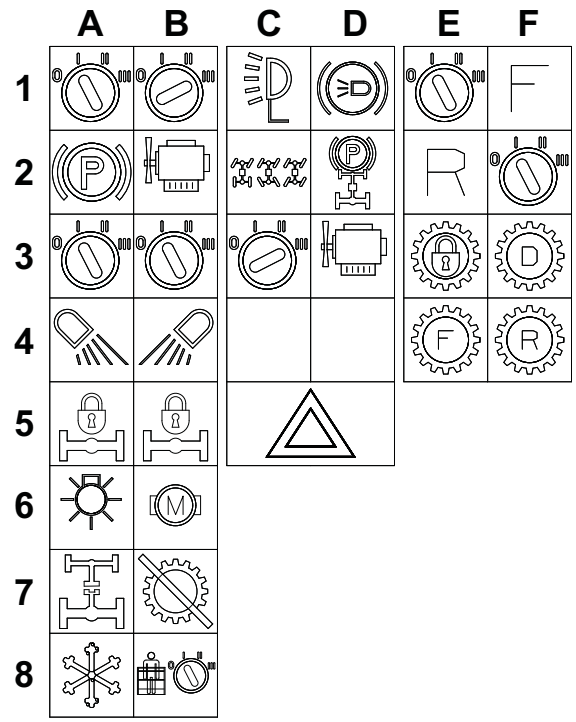


Fig 299.

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

Relay No.	Circuit
A1	Ignition
A2	Parkbrake Warning Light
A3	Ignition
A4	Rear Worklights
A5	Rear Axle Lock
A6	Roadlights
A7	2WD
A8	Air Conditioning
B1	Neutral Start
B2	Engine Running
B3	Ignition
B4	Front Worklights
B5	Rear Axle Lock
B6	Fuel Pump
B7	Transmission Dump
B8	Man Platform
C1	Boom Worklight
C2	Steer Mode
C3	Neutral Start
C4	Not Used
C5	Flasher Unit
D1	Brake Lights
D2	2WD Parkbrake
D3	Engine Running
D4	Not Used
D5	Flasher Unit
E1	Ignition
E2	Reverse Drive
E3	Drive
E4	Forward High/Low
F1	Forward Drive
F2	Ignition
F3	Driveshaft
F4	Reverse High/Low

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550/560-80

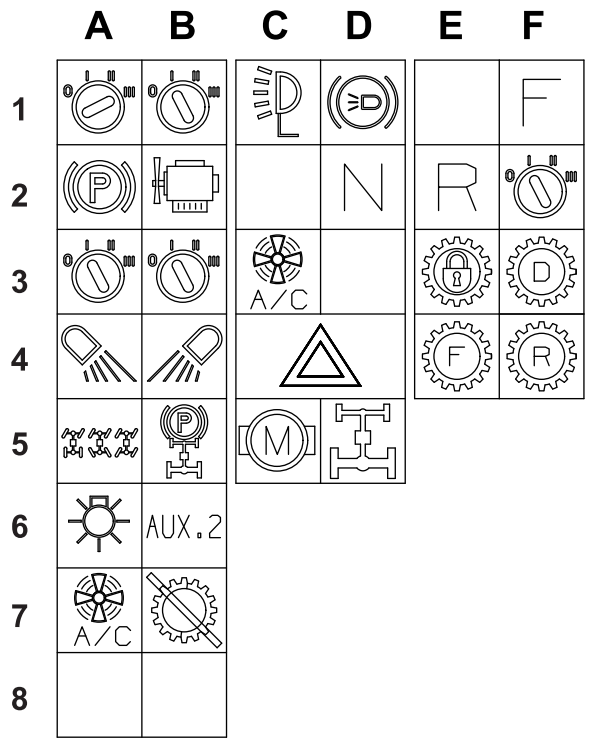


Fig 300.

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

Table 50.

Relay No.	Circuit
A1	Neutral start
A2	Parkbrake
A3	Ignition relay
A4	Rear worklights
A5	Steer mode
A6	Roadlights
A7	Roof air conditioning fan
A8	Blank
B1	Ignition relay
B2	Engine running
B3	Ignition relay
B4	Front worklights
B5	2WD park brake
B6	Auxiliary 2
B7	Transmission dump
B8	Blank
C1	Boom worklight
C2	Blank
C3	Roof air conditioning fan
C4	Flasher unit
C5	Fuel pump
D1	Brake lights
D2	TBA
D3	Blank
D4	Flasher unit
D5	2WD
E1	Blank
E2	Reverse drive
E3	Driveshaft
E4	Forward high/low
F1	Forward Drive
F2	Ignition relay
F3	Drive
F4	Reverse high/low

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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**.

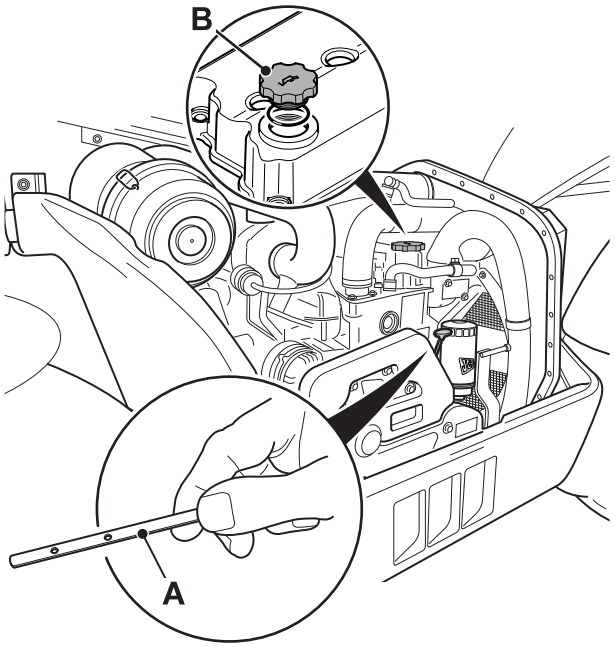
⚠ WARNING

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.



803062-2

Fig 301.

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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.

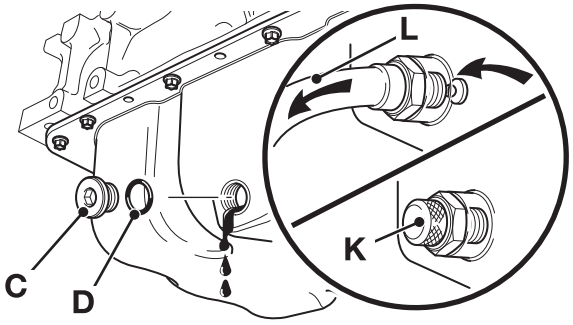
13-3-1-15

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**.



C012110-1

Fig 302.

4 Place a container of suitable size under drain plug **E** to catch the oil. ⇒ *Fig 303. (301)*.

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**.

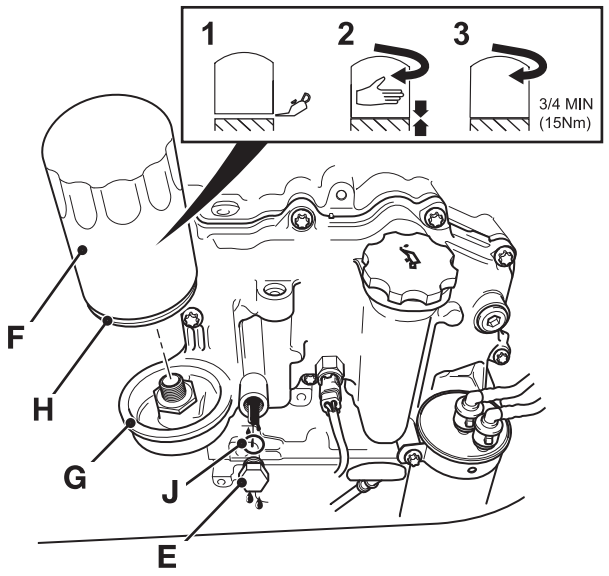
8 Smear the seal **H** on the new filter canister **F** with clean engine oil.

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.



C012110-5

Fig 303.

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Cooling System

Checking the Coolant Level

Visually check the coolant level daily.

Check the quality of the antifreeze mixture and change it according to the service schedule.

⚠ 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***.

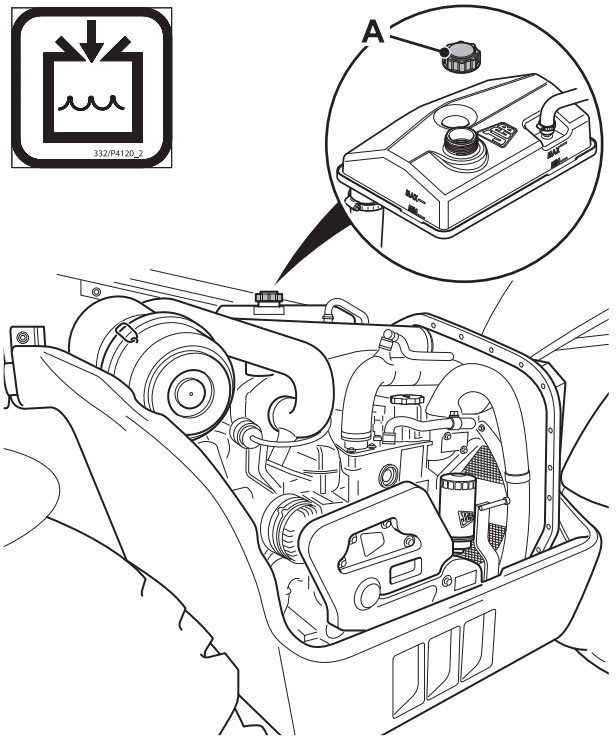
2 The coolant level should be between the **MIN** and the **MAX** marks on coolant reservoir.

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.



803342-4

Fig 304.

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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.

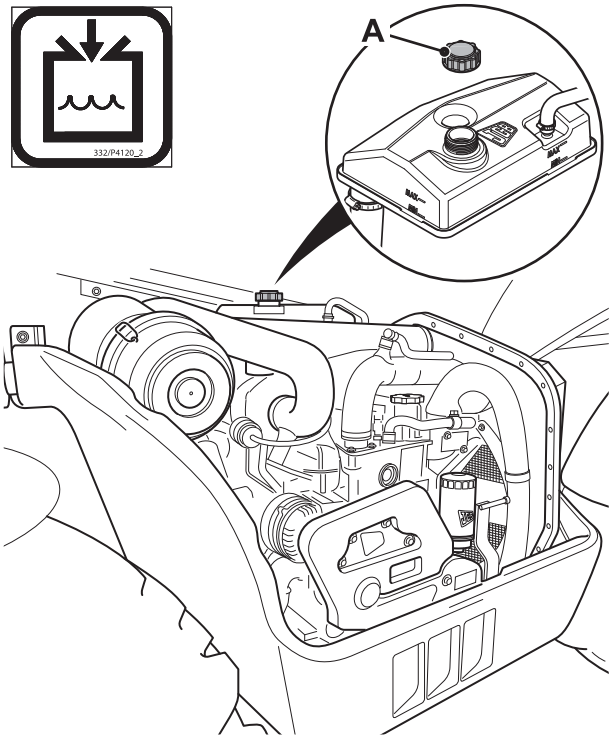


Fig 305.

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Crankcase Ventilation (if fitted)

Changing the Filter Element

The filter element must be changed at the recommended interval.

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

2 Undo the clips **A** and lift off the filter cover **B**.

3 Lift out the filter element **C** and discard it.

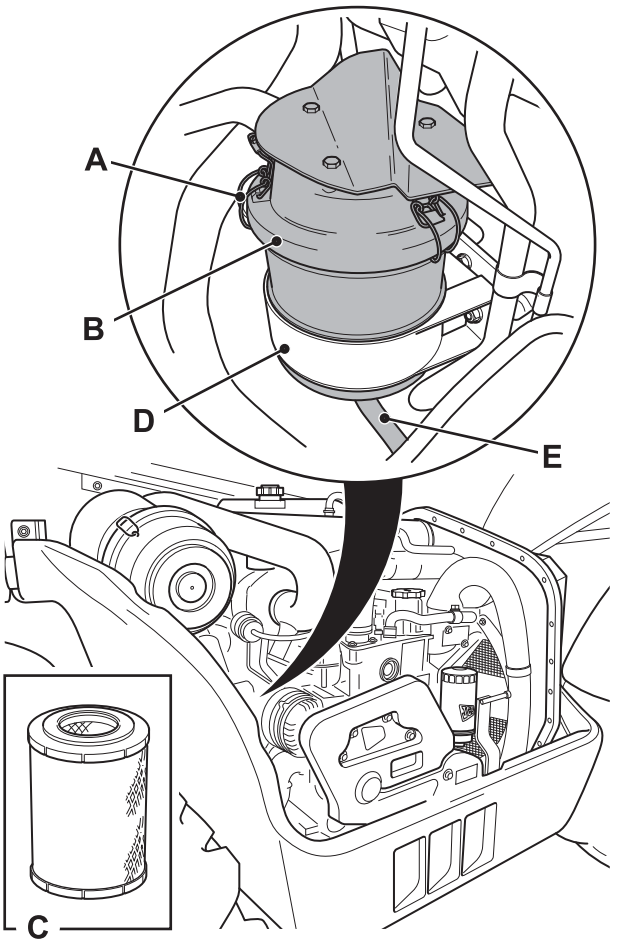
4 Clean the inside of the filter housing **D**. Remove all oil and sludge contamination.

5 Make sure that the oil drain in the bottom of the filter housing is not blocked with sludge. If necessary remove the drain pipe **E** at the engine. Make sure that the drain pipe non-return ball valve at the bottom of the filter housing is fitted and free to move.

6 Fit a new filter element **C**.

Important: *Install the correct type of filter element.*

7 Install the filter cover **B**.



T006850-2

Fig 306.

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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.

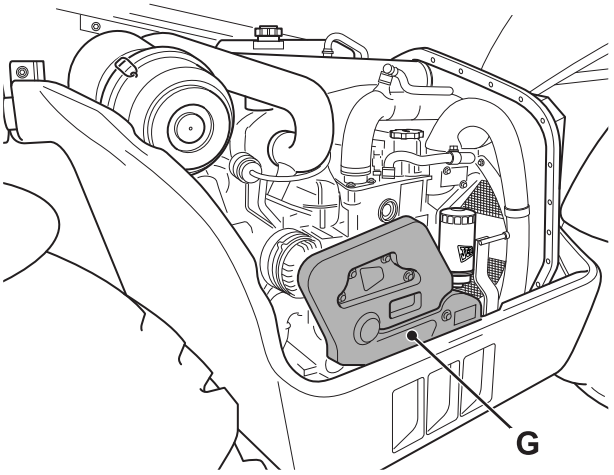
0094

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 307. (🗋 305)*.

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



803062-1

Fig 307.

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Inspecting the Drive Belt

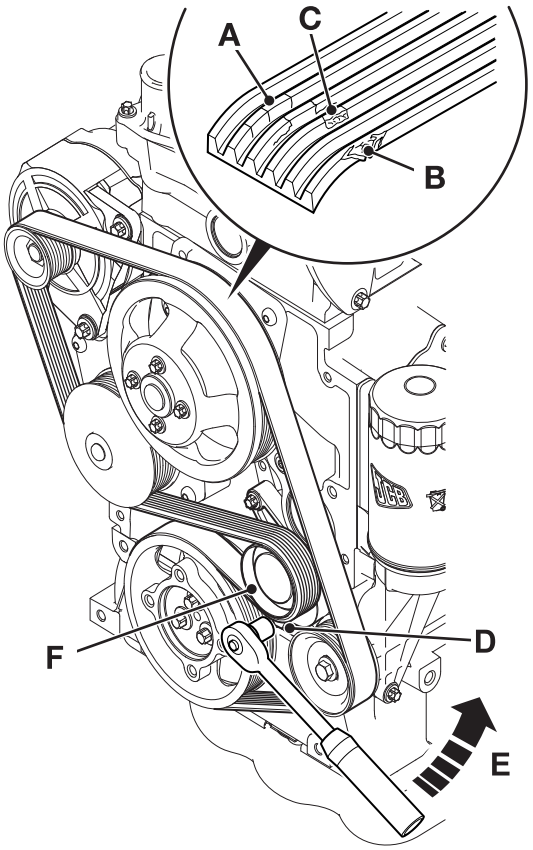
T3-029

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 308. (306)*.

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



763440-2

Fig 308.

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 308. (306)*.

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**.

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Air Filter

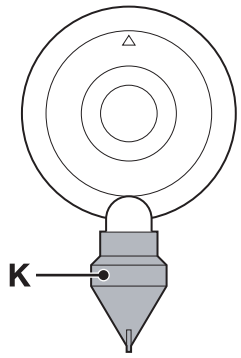
Cleaning the Air Filter Dust Valve

T3-034

Important: *Do not run the engine with the dust valve **K** removed.* *⇒ Fig 309. (307)*.

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.



332260-1

Fig 309.

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 310. (308)*.

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**.

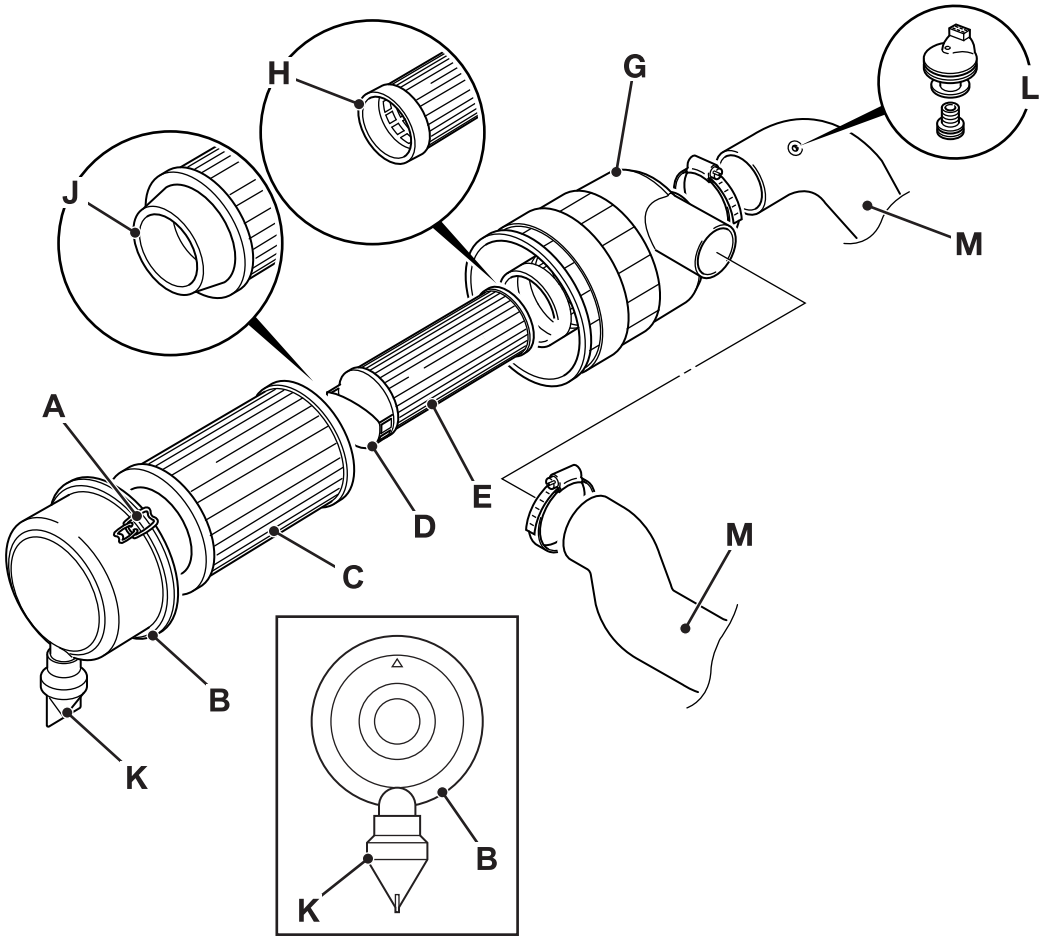
4 Carefully insert the new inner element **E** into the canister. Make sure it seats correctly. check seal **H** is fully seated.

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.

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760090-3

Fig 310.

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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

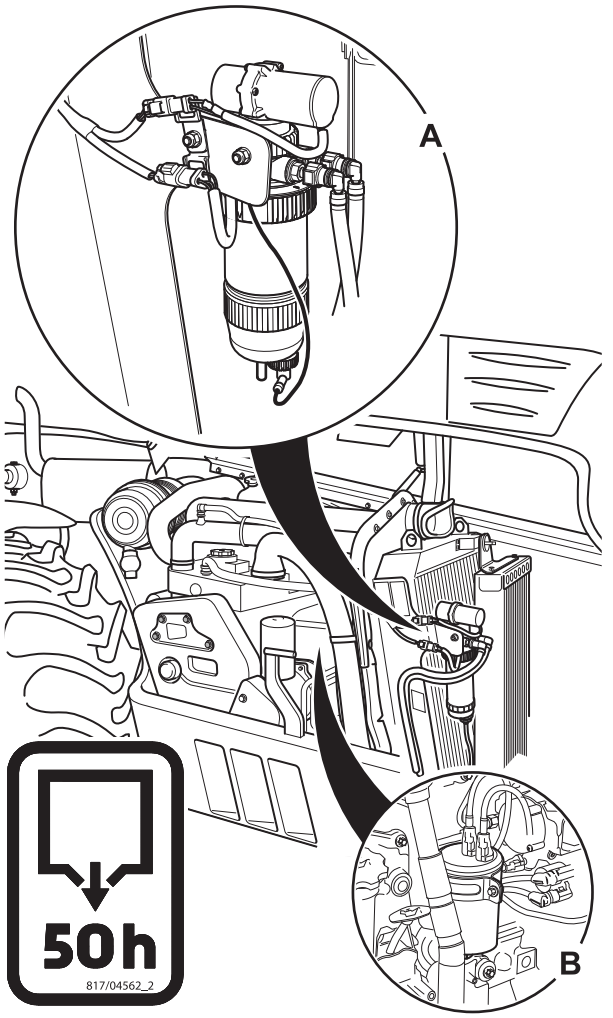
Water Separator and Engine Fuel Filter

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***.

Note: *The illustration shows the water separator **A** with the electronic fuel pump. Unless stated, the following procedures apply to the electronic fuel injection system and the mechanical fuel injection system.*



803061-13

Fig 311.

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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).

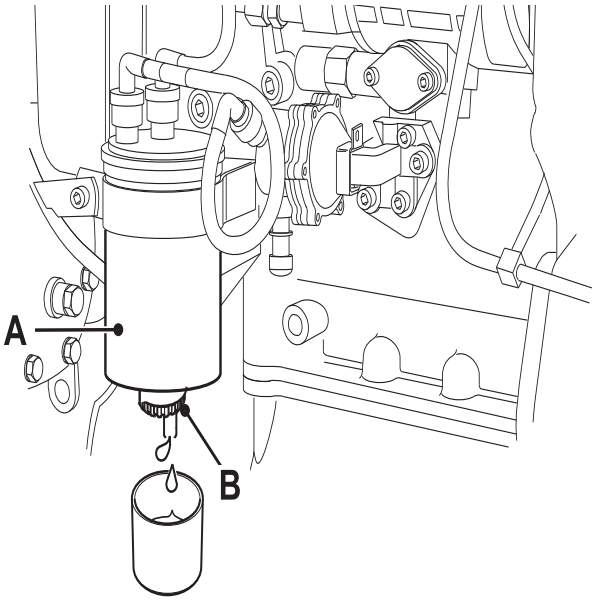
4 If there is sediment in the bowl after draining, support the bowl and release the locking ring **F**.

5 Wash the bowl in clean fuel.

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

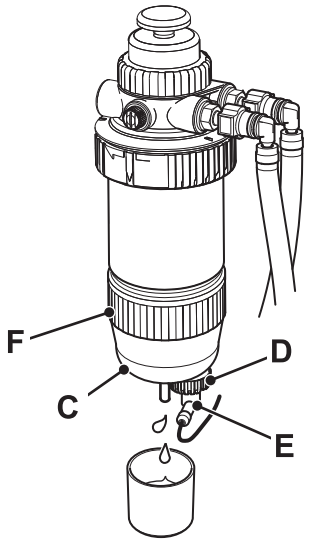
Important: *Ensure the seal is seated correctly before refitting the bowl. Refer to* ***Changing the Water Separator Pre-Filter****.*

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



C040110-1

Fig 312.



C048590-1

Fig 313.

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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***.

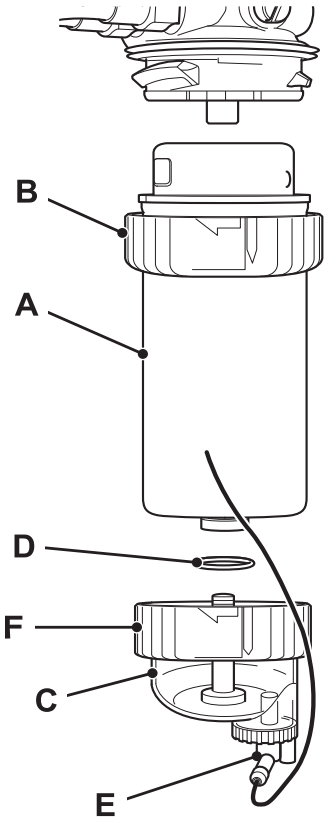
3 To remove the filter element **A**, release locking ring **B** and discard element.

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.



C007030-5

Fig 314.

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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.

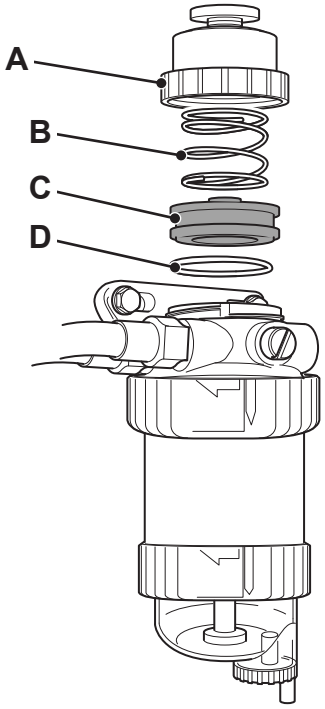
6 Remove any debris in the water sedimenter and inlet connectors as required.

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***.



812300

Fig 315.

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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.

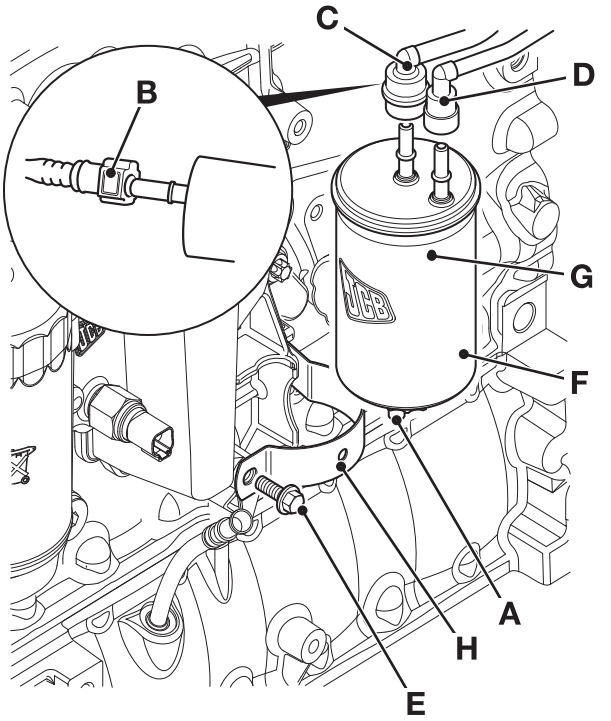
4 Mark the pipes prior to removal to ensure they are refitted in the correct position. Press fuel coupling release button **B** and disconnect fuel lines **C** and **D**.

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***.



C007090

Fig 316.

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Electronic Fuel Injection System

T3-081

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

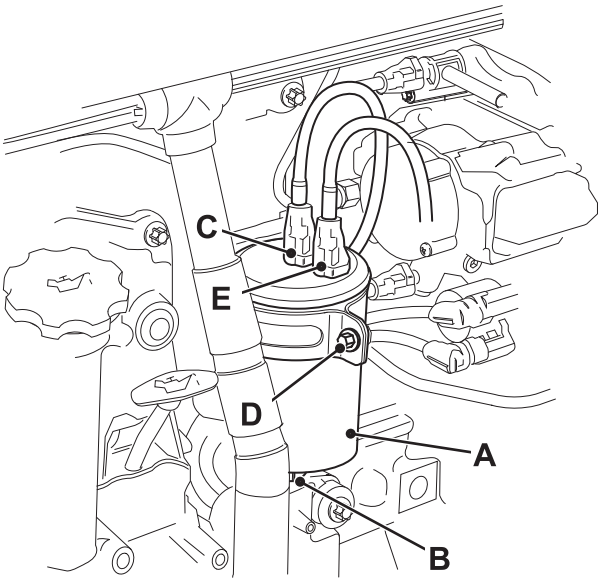
4 Remove the low pressure fuel lines **C** and **E**. Mark the pipes prior to removal to ensure they are refitted in the correct position.

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

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

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

8 Bleed the fuel system. Refer to ***Bleeding the System***.



C048500-1

Fig 317.

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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.

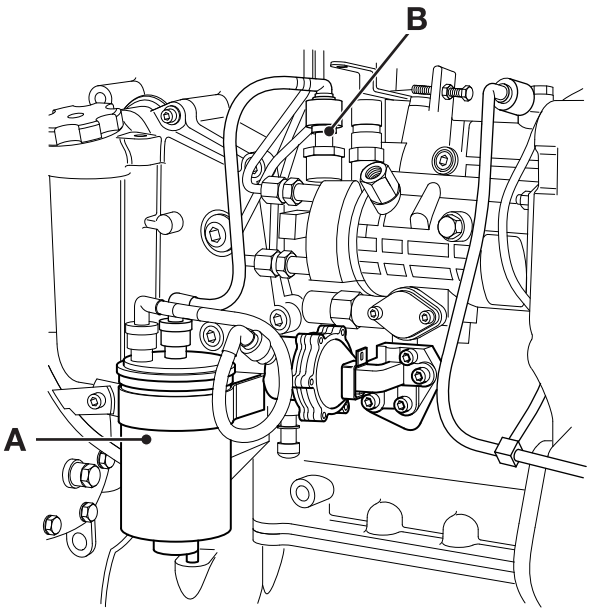
2 Operate the fuel lift pump priming button **C** until air free fuel exits from the fuel line.

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.

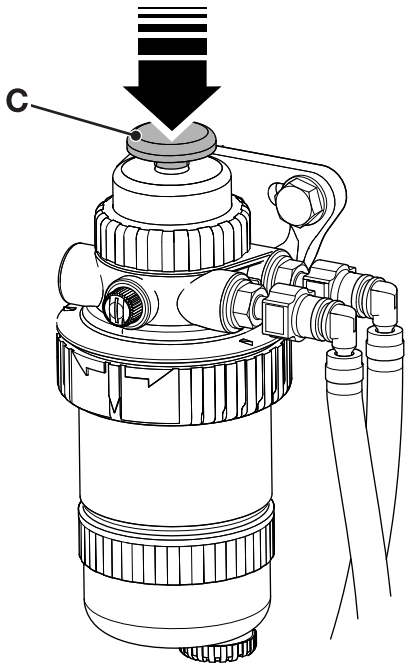
If the engine continues to run roughly, check again for air in the fuel system.

If the fault persists contact your nearest JCB dealer.



763991-2

Fig 318.



763990-2

Fig 319.

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Electronic Fuel Injection System

T3-080

The engine installation features an electrically operated fuel lift pump **A**. The system is designed to bleed automatically when the lift pump is operated. Make sure that as much air is removed from the fuel as possible before starting the engine.

⚠ WARNING

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

13-3-2-16

Important: *Do not attempt to bleed the high pressure fuel system by loosening high pressure pipe connections even when the engine is not running. To bleed the fuel system follow the correct procedure.*

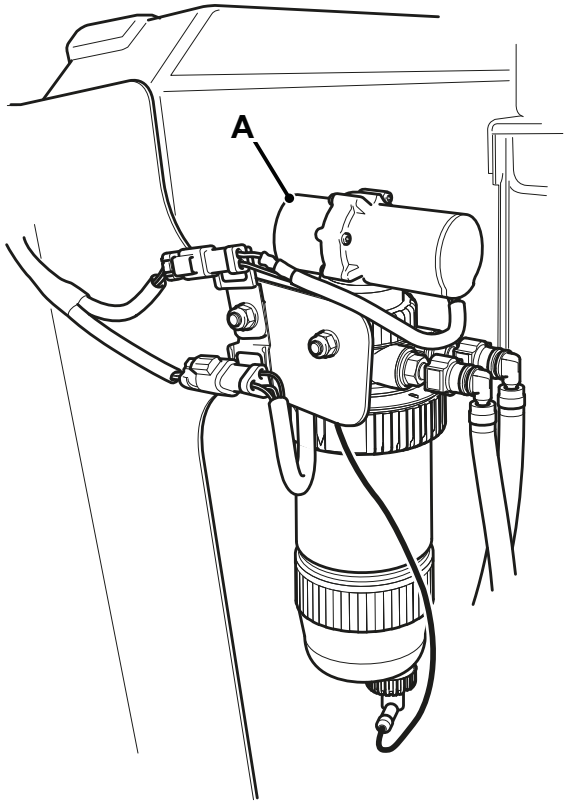
Bleed the system as follows:

1 Turn on the starter switch to start the fuel lift pump **A**. Do not start the engine. Allow the pump to run for 30 seconds.

2 Turn off the starter switch to stop the fuel lift pump **A**. Wait 10 seconds and then turn the starter switch to start the pump. Do not start the engine. Allow the pump to run for 30 seconds.

3 Repeat step 2 twice more before starting the engine.

4 Start the engine and make sure it runs smoothly.



C048590

Fig 320.

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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

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Releasing the Hydraulic Pressure

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

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

a 550/560-80 and 540-200 machines - turn the starter key to the ON position.

Important: *Until the hydraulic pressure is fully released the boom lower and retract service are still operative when the engine is not running. Make sure that the boom is lowered or supported fully on the safety strut.* ⇨ ***Prepare the Machine for Maintenance (🗋 201)***

Operate the boom raise/lower hydraulic services until the pressure is released.

b Manually operated hydraulic services - operate the controls of the service to be disconnected.

c Electrical and servo operated hydraulic services - turn the starter key to the ON position.

Operate the controls of the service to be disconnected.

Important: *To release the hydraulic pressure from the 550/560-80 and 540-200 machines and electrical/servo operated services the battery must be connected while you operate the controls.*

3 If necessary, open rear cover **A** to get access to the filler cap **B**. Refer to ***Access Panels, Rear Cover (if fitted)***.

4 Clean the top of the tank around the filler cap **B**.

⚠ 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.

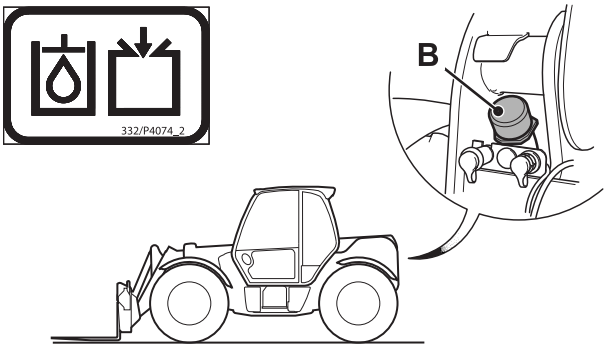
5-3-4-8

⚠ CAUTION

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

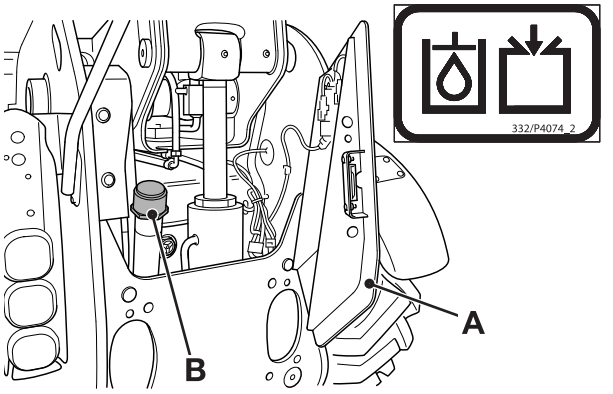
5-3-4-1

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



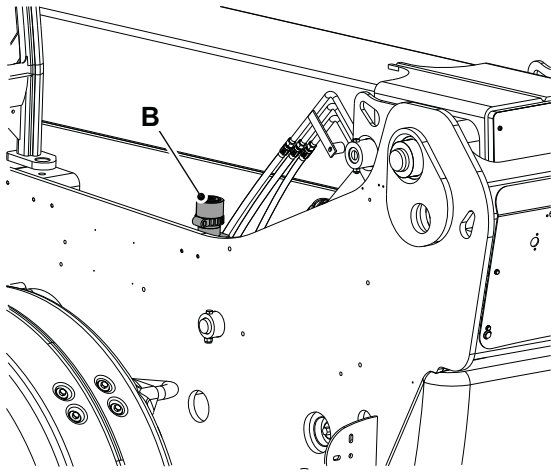
A710870-5

Fig 321. Machines with External Sight Gauge



732370-5

Fig 322. Machines without External Sight Gauge



T066190-3

Fig 323. 540-200 Secondary Filler Neck

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Oil and FIlters

Checking the Hydraulic Fluid Level

Machines with External Sight Gauge

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 should be visible in the sight gauge **G**.

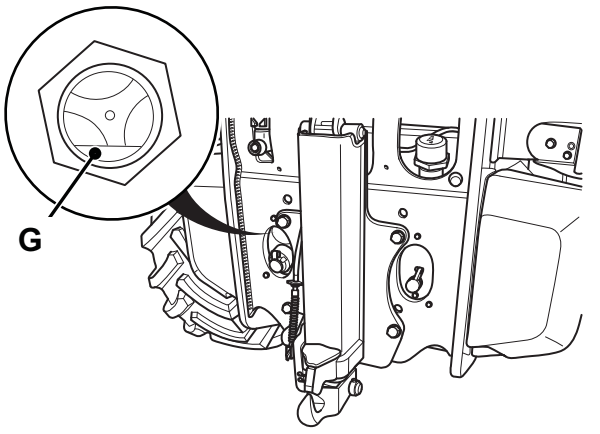
If the fluid is not visible, continue to step 3.

3 Vent the hydraulic system. Refer to ***Releasing the Hydraulic Pressure***.

4 Add recommended fluid through the filler neck.

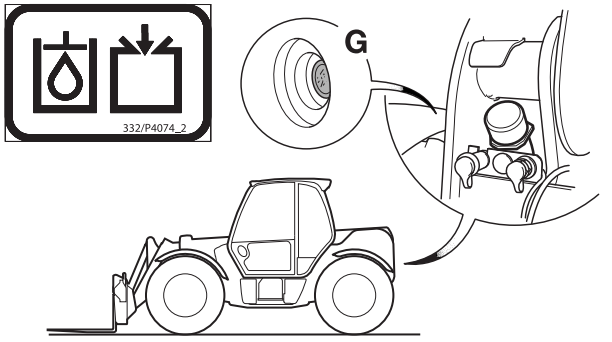
Note: *540-200 machines have a secondary filler neck **H**.*

5 Install the filler cap.



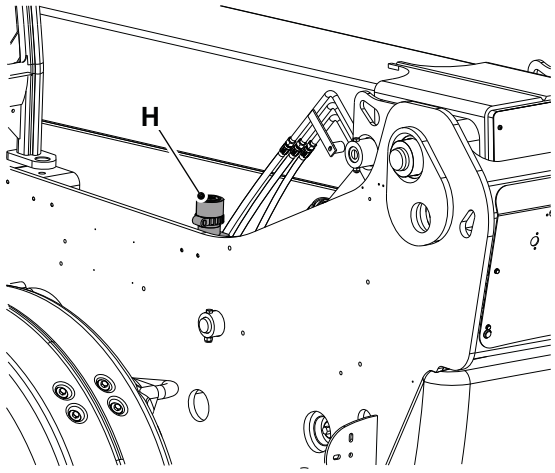
C111470-C2

Fig 324. 550/560-80 Machines



A710870-6

Fig 325. Other Machines



T066190-1

Fig 326. 540-200 Secondary Filler Neck

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Machines without External Sight Gauge

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

2 Open rear cover B. Refer to ***Access Panels, Rear Cover (if fitted)***.

3 Vent the hydraulic system. Refer to ***Releasing the Hydraulic Pressure***.

⚠ 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

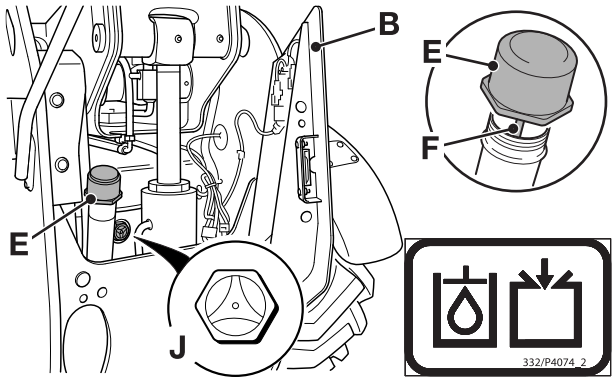
4 The fluid level should be visible in sight gauge **J**.

If no sight gauge is fitted, make sure that the fluid level is between the two marks on dipstick **F**.

If necessary, add recommended fluid through the filler **E**.

5 Install the filler cap.

6 Close rear cover **B**.



732370-6

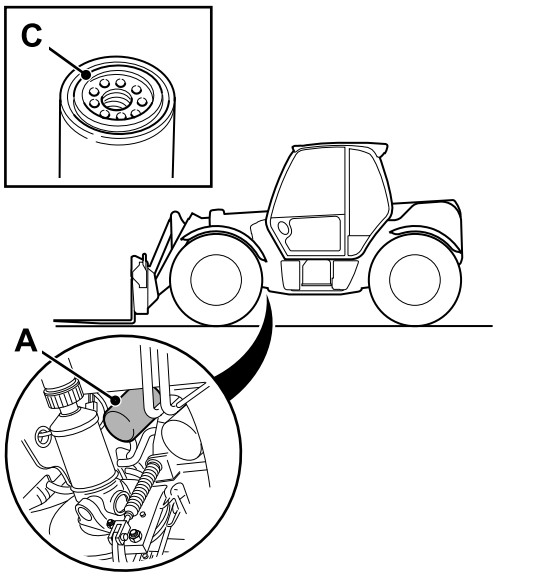
Fig 327.

Changing the Filter Element

Oil Filter (Canister Type)

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

Note: *On 535-125 HiViz, 535-140 HiViz and 540-140 HiViz machines, the canister filter **A** is located to the front of the rear axle.*



T000890-C1

Fig 328.

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 Clean the area around the filter body.

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

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

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⚠ CAUTION

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

2-3-4-1

6 Fit the new element:

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

7 Check oil level and replenish as required through filler.

8 Install the filler cap.

9 Check for leaks:

- **a** Run the engine for a few minutes.
- **b** Make the machine safe.
- **c** Check for leaks at the filter.

Oil Filter (Hydraulic Oil Tank, Top Mounting)

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

2 Open rear cover. Refer to ***Access Panels, Rear Cover (if fitted)***.

3 Vent the hydraulic system. Refer to ***Releasing the Hydraulic Pressure***.

4 Clean the top of the tank around the filter.

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

6 Remove the element assembly:

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

7 Remove the element from its canister:

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

8 Fit the new element.

- **a** Fit a new seal **H**.
- **b** Make sure that seal **J** is fitted in the new element.
- **c** Push the element **G** into its canister **F** and rotate the element 90° to lock it into position. Check that the element has locked into position by pulling on handle **E**.
- **d** Install the element assembly in the hydraulic tank.

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e Fit spring **D** and gasket **C**.

f Fit cover plate **B** and tighten screws **A**.

9 Check oil level and replenish as required through filler.

10 Install the filler cap.

11 Close rear cover.

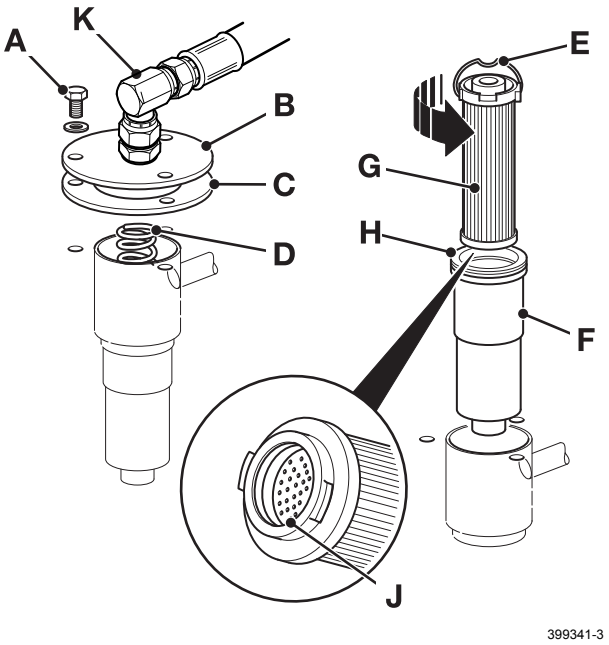


Fig 329.

Oil Filter (Hydraulic Oil Tank)

The oil filter found on 550/560-80, Agri, Agri Plus, Agri Super and Agri Xtra models is mounted inside the hydraulic oil tank. You will need special tools to remove and replace this filter. For further information about how to remove and replace this filter correctly, you must refer to the machine service manual or contact your JCB distributor.

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Changing the Pilot Filter Element

Pilot Filter (Canister Type)

⚠ WARNING

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

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

5-3-1-2_2

⚠ WARNING

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

7-3-6-2

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

2 Vent the hydraulic system. Refer to ***Releasing the Hydraulic Pressure***.

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

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

4 Unscrew end cap **B**.

5 Remove element with associated seals and discard.

6 Fit new element, together with new seals.

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

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

9 Install the filler cap.

10 Run the engine and check for leaks.

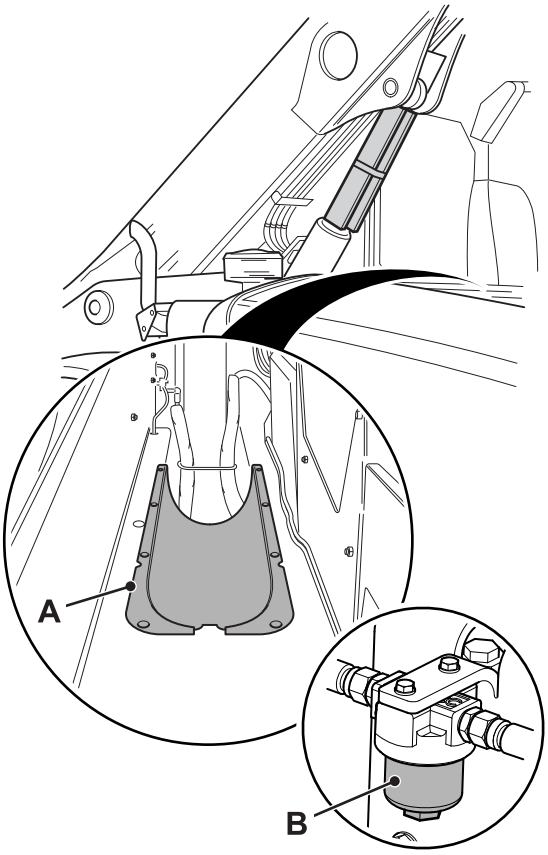


Fig 330.

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Pilot Filter (Valve Mounted Type)

The procedure shown relates to machines with single lever controls (push button type) only.

Agri, Agri Plus, Agri Super models and 540-170 have different valve mounted pilot filters. For further information about how to remove and replace these filter correctly, you must refer to the machine service manual or contact your JCB distributor.

⚠ WARNING

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

3-3-1-1

1 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 Unscrew end cap **A**.

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

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

6 Refit cap **A**.

7 Install the filler cap.

8 Run the engine and check for leaks.

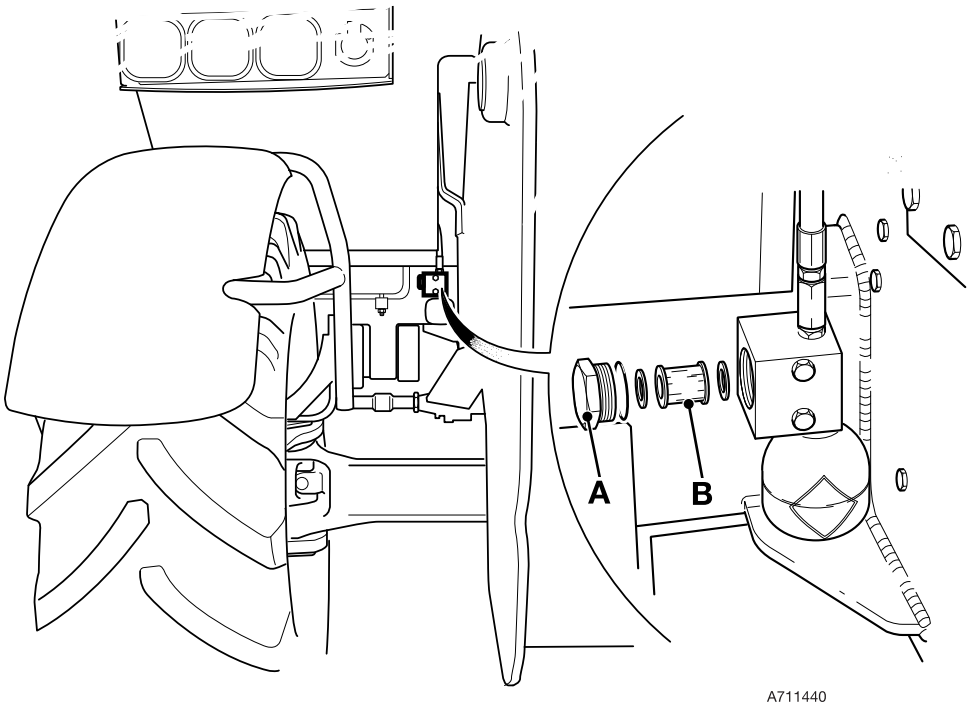


Fig 331.

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Hose Burst Protection Valves

Checking the Hose Burst Protection Valves

Introduction

P5-3001_2

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

⚠ WARNING

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

5-3-4-2

Check each movement in turn.

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

Boom Lift Rams

P5-3002_3

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

2 Raise the boom to about 45°.

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

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

Boom Extension Ram

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

2 Raise the boom fully. Extend the boom fully.

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

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

Carriage Tilt Ram

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

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

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

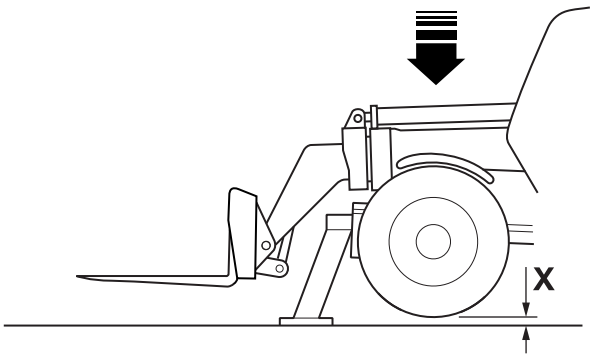
If the carriage continues moving after the engine has stopped, the hose burst protection valve is faulty. Do not use the machine until the fault has been put right.

Stabiliser Ram (if fitted)

P5-3003_4

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

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



797600

Fig 332.

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

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

Sway Ram (if fitted)

P5-3004_3

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

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

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

4 Repeat steps 1 - 3 for right sway.

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

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Transmission

Gearbox

Checking the Oil Level

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

2 Switch OFF the engine and remove the starter key.

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

Before you complete a check of the oil level, you must wait as shown on the instructional label **A**.

Note: *The instructional label shows the time in seconds.*

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

5 Add oil as necessary. Fill through the dipstick tube to maximum dipstick level. Use only the recommended oil.

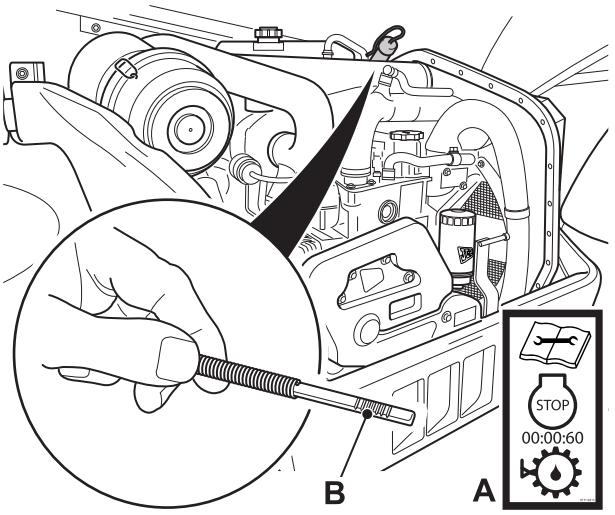


Fig 333.

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Changing the Oil and Filter

4-Speed Powershift Transmission

P5-3017_2

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

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

⚠ CAUTION

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

2-3-4-1

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

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

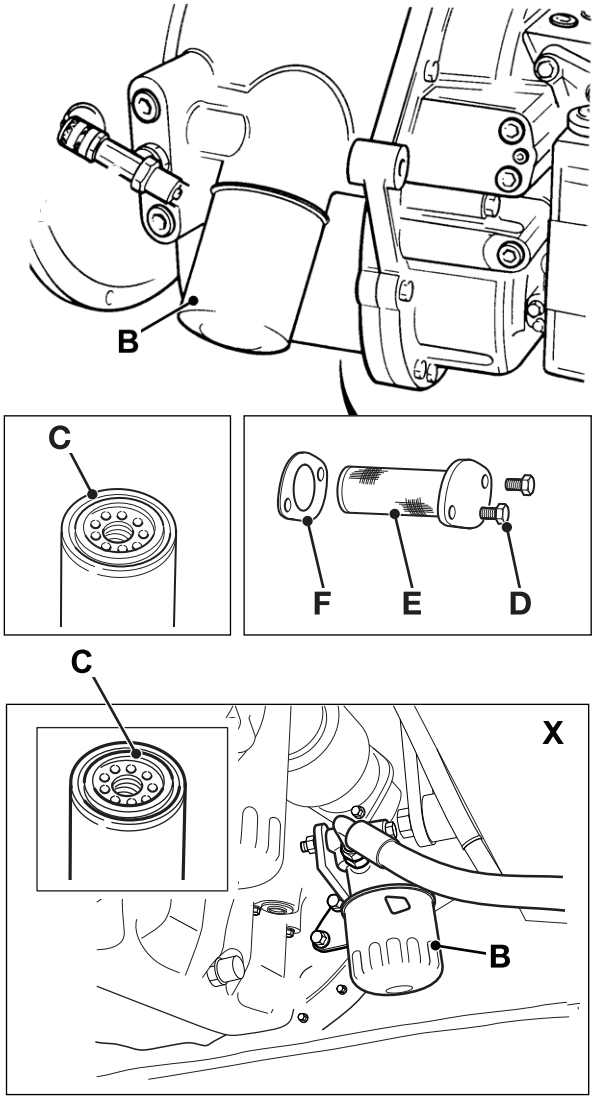
4 Fit the strainer **E** and a new gasket **F**. Apply JCB Threadlocker and Sealer to bolts **D** before fitting and tightening them. Torque tighten the bolts to 10 Nm (7 lbf ft).

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

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

6 Fill the system with new oil through the dipstick/filler. Do not fill past the top mark on the dipstick.

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



C011560-C2

Fig 334.

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6-Speed Powershift Transmission

P5-3019_2

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

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

⚠ CAUTION

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

2-3-4-1

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

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

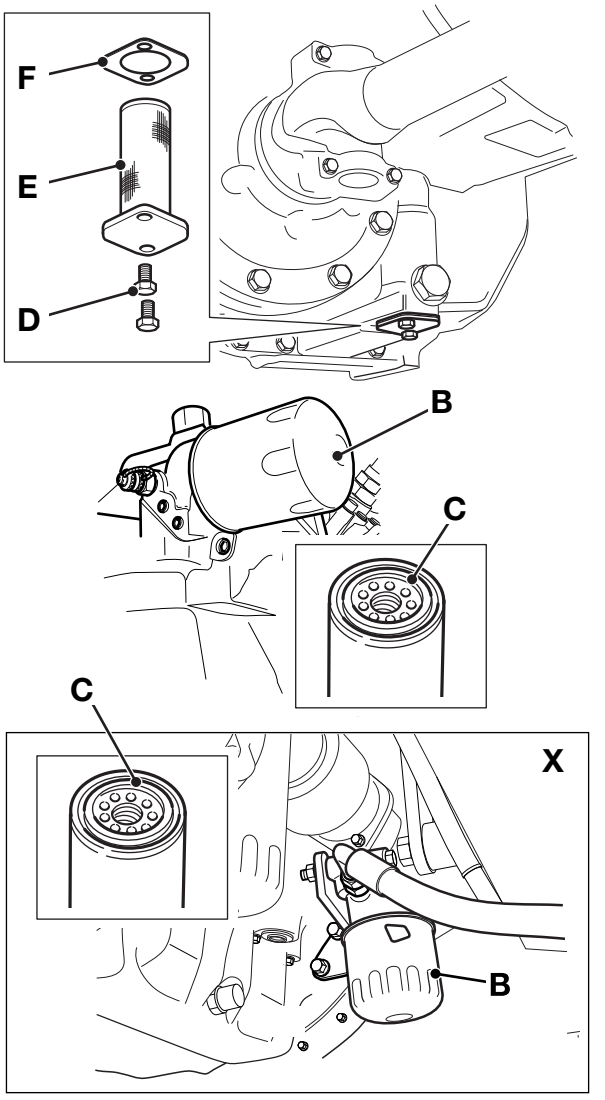
4 Fit the strainer **E** and a new gasket **F**. Apply JCB Threadlocker and Sealer to bolts **D** before fitting and tightening them. Torque tighten the bolts to 10 Nm (7 lbf ft).

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

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

6 Fill the system with new oil through the dipstick/filler. Do not fill past the top mark on the dipstick.

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



C029580

Fig 335.

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Front and Rear Axle

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

550/560-80 Machines	⇨ *Fig 336. (🗋 331)*
Machines with Powered Track Rods	
535-125 HiViz, 535-140 HiViz, 540-140 HiViz:	⇨ *Fig 337. (🗋 331)*
Other models:	⇨ *Fig 338. (🗋 331)*
Machines with Double Acting Cylinders:	⇨ *Fig 339. (🗋 332)*

Checking the Axle 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

⚠ 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. Tighten plugs to 79 Nm (60 lbf ft).

Changing the Axle Oil

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.

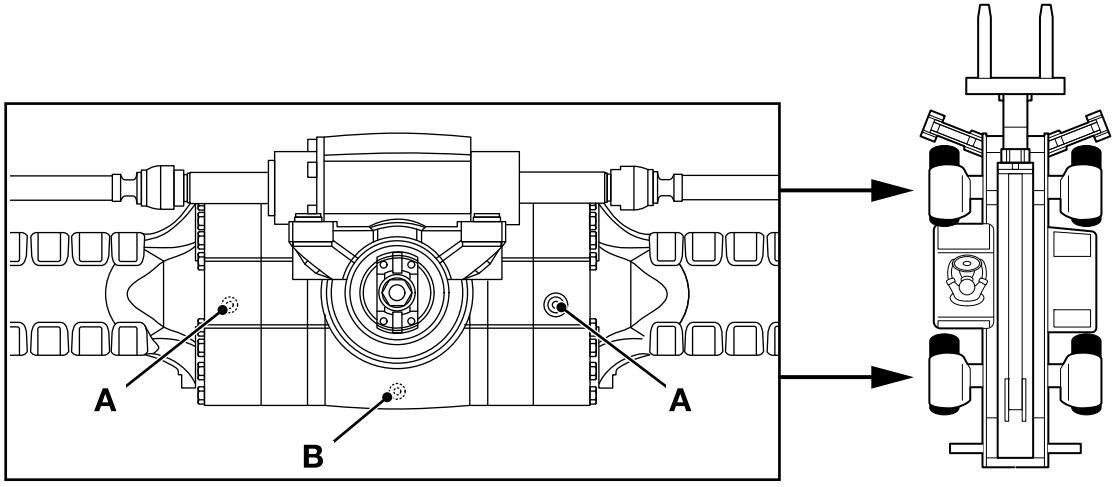
⚠ CAUTION

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

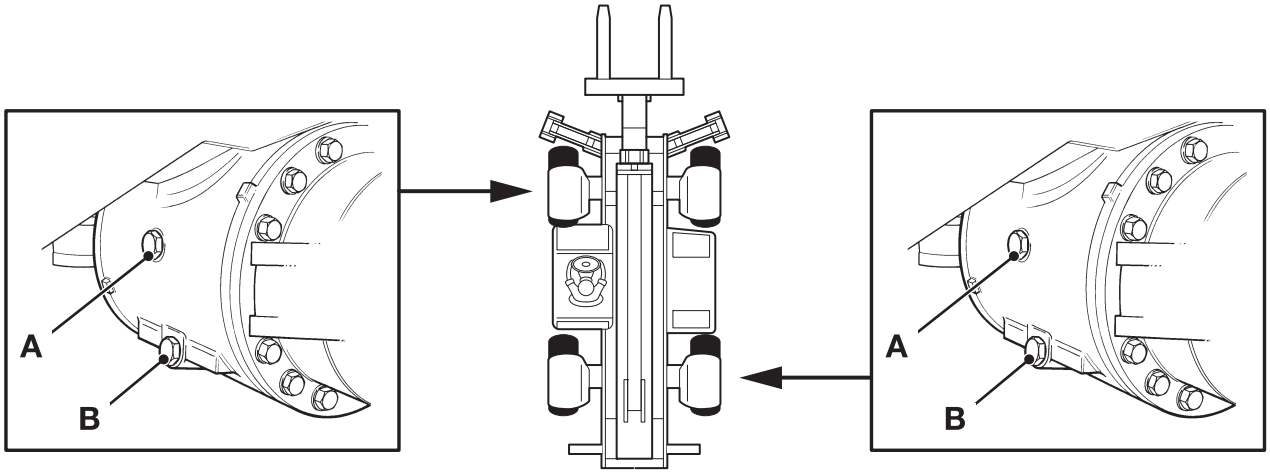
3 Fill with recommended oil through fill/level hole **A**. Clean and refit plug **A** and its seal. Tighten plugs to 79 Nm (60 lbf ft).

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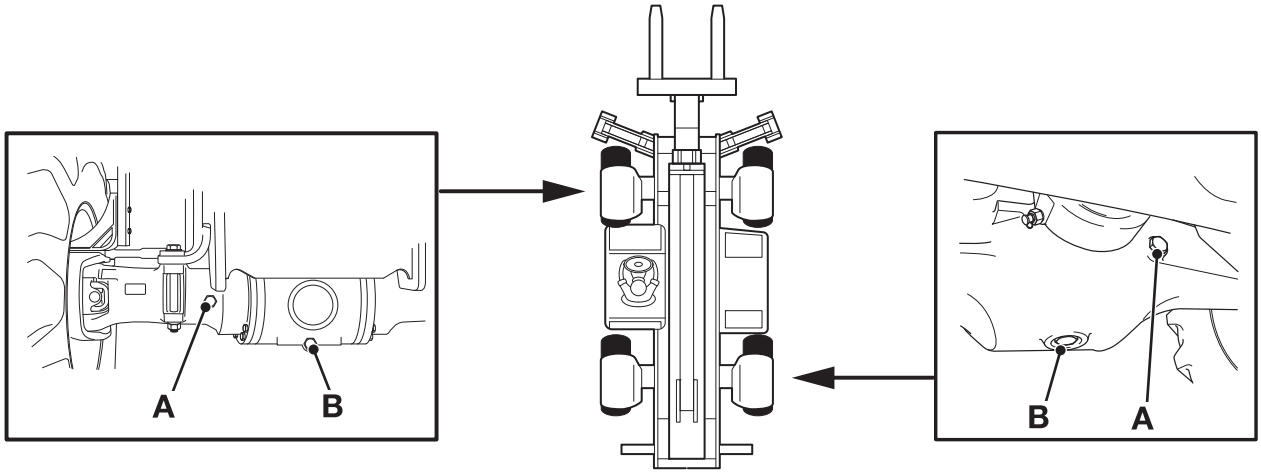
C110320

Fig 336. 550/560-80



795230-3

Fig 337. Machines with Powered Track Rods (535-125 HiViz, 535-140 HiViz, 540-140 HiViz)



795220-2

Fig 338. Machines with Powered Track Rods (Other models)

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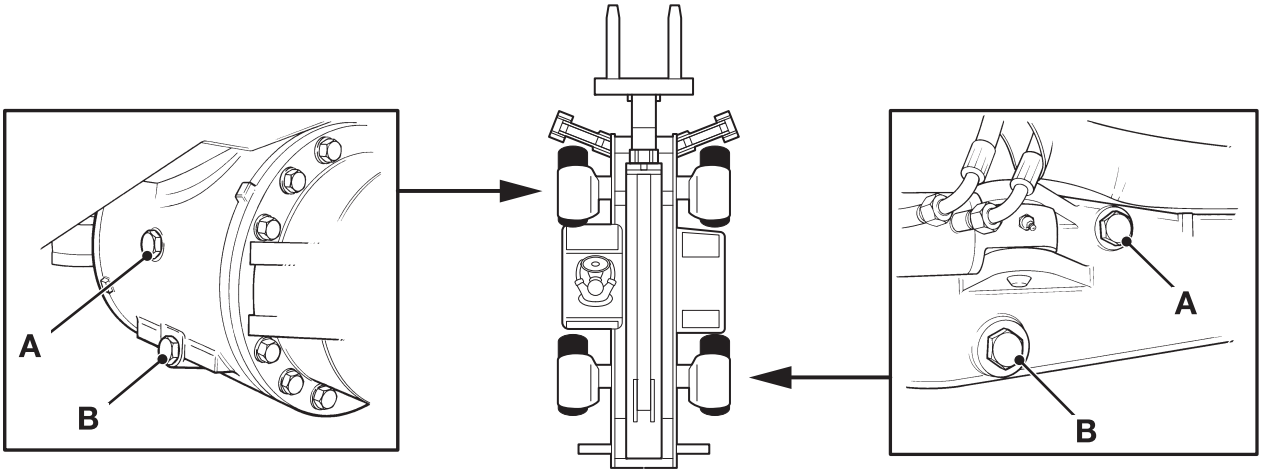


Fig 339. Machines with Double Acting Cylinders

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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 **340-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.

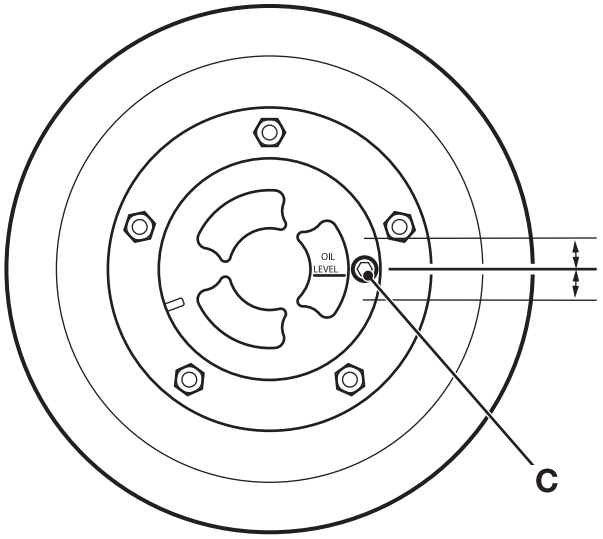


Fig 340.

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 **341-C** at the bottom.

2 Drain the oil:

a Place a container of suitable size beneath plug **341-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 **341-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 **341-C**. Oil should be level with the bottom of the fill/level hole.

b Clean and refit fill/level plugs **341-C**.

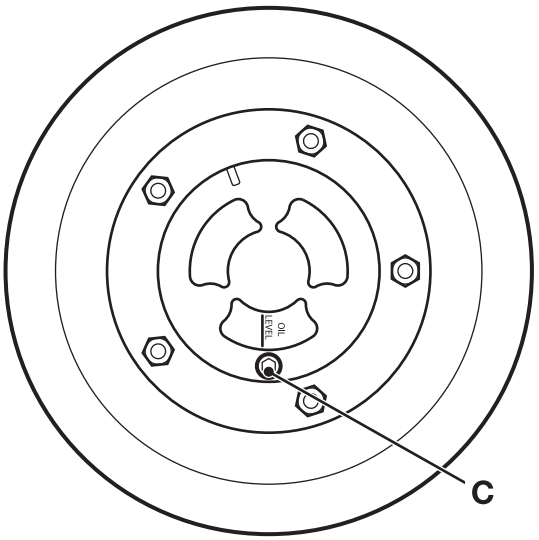


Fig 341.

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Tyres and Wheels

Tyre Inflation

Introduction

T3-066

⚠ WARNING

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

2-3-2-7_2

⚠ WARNING

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

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

13-3-1-7_1

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 342. (🗋 334)*.

2 Prepare the equipment.

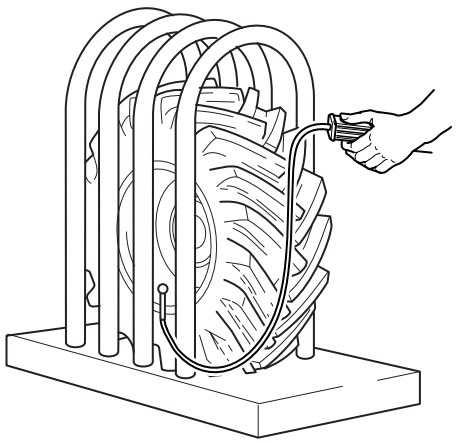
a Use only an air supply system which includes a pressure regulator. Set the regulator no higher than 1.38 bar (20 psi) above the recommended tyre pressure. For recommended tyres and pressures for your machine, see ***Specifications, Tyre Sizes and Pressures***.

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.



A089570-1

Fig 342.

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Wheel Nuts

Checking the Wheel Nut Torques

T3-014_3

⚠ 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 51.

	Front	Rear
	Nm (lbf ft)	Nm (lbf ft)
550/560-80 Machines	650 (480)	650 (480)
Other Machines	680 (500)	680 (500)

Wheel Nut Torque Indicators (if fitted)

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

Tighten wheel nuts to specified torque before fitting the torque indicators as shown. ⇨ ***Checking the Wheel Nut Torques (🗋 335)***. Note the torque indicators orientation in relationship to wheel's direction of travel **X**.

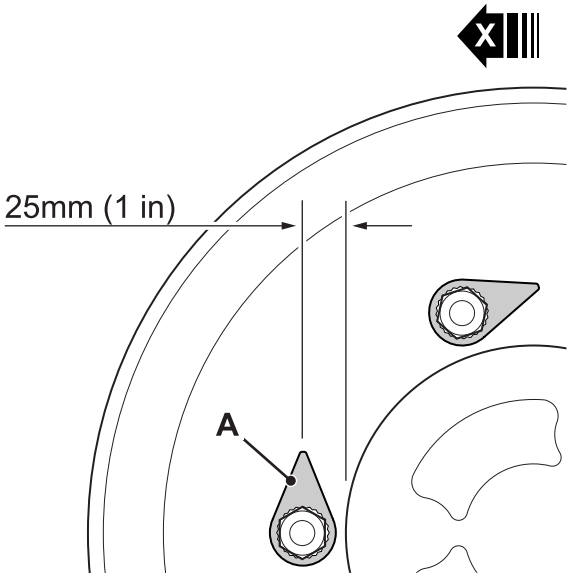


Fig 343.

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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).

Manual Steer Mode Selector

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

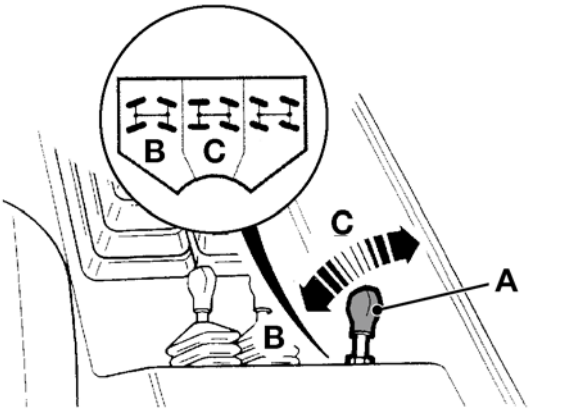
2 Use the lever **A** to select 4-wheel steer **B**.

3 Turn the steering wheel until the 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 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.



420680-3

Fig 344.

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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.

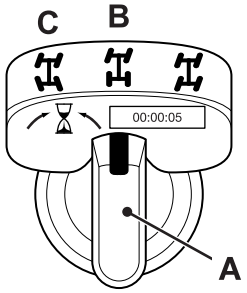


Fig 345.

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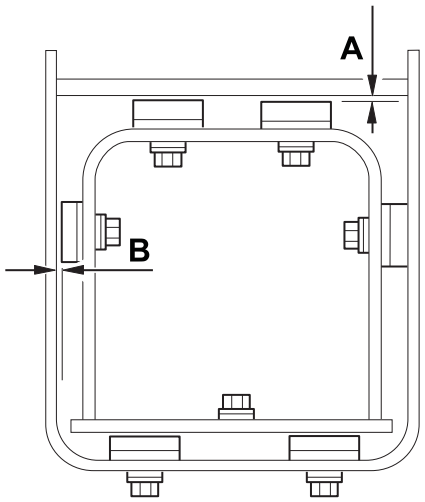
Wear Pads

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.

Wear Pad Clearance - 2 Stage Boom

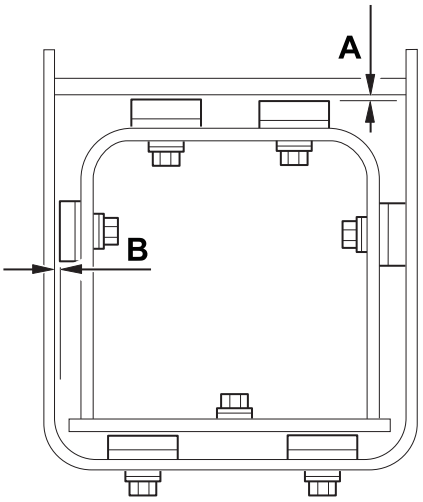


347130-C2

Fig 346. 550/560-80 Machines

Table 52. Maximum Gap

Dimension	mm	in
A	1.5mm	0.05
B	1.5mm	0.05



347130-C2

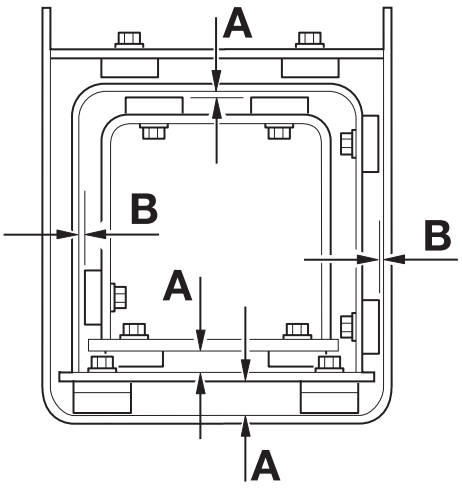
Fig 347. Other Machines

Table 53. Maximum Gap

Dimension	mm	in
A		
Boom Front	3.0	0.12
Boom Rear	1.5	0.06
B		
Boom Front	3.0	0.12
Boom Rear	1.5	0.06

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Wear Pad Clearance - 3 Stage Booms

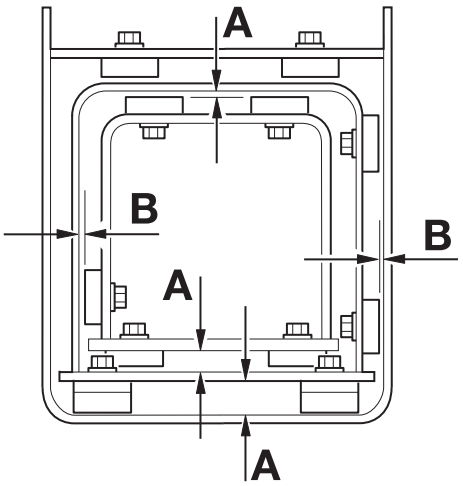


347141-C1

Fig 348. 540-140 machines

Table 54. Measurements

Dimension A	
Front	Vertical clearance Max 3.0 mm (0.11 in)
Rear	Vertical clearance Max 1.5mm (0.05 in)
Dimension B	
Front	Side clearance Max 3.0 mm (0.11 in)
Rear	Side clearance Max 1.5mm (0.05 in)



347141-C1

Fig 349. 535-125 and 535-140 HiViz, 540-140 HiViz machines

Table 55. Measurements

Dimension A	
Front	Vertical clearance Max 3.0 mm (0.11 in)
Rear	Vertical clearance Max 1.5mm (0.05 in)
Dimension B	
Front	Side clearance Max 3.0 mm (0.11 in)
Rear	Side clearance Max 1.5mm (0.05 in)

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Wear Pad Clearance - 4 Stage Boom

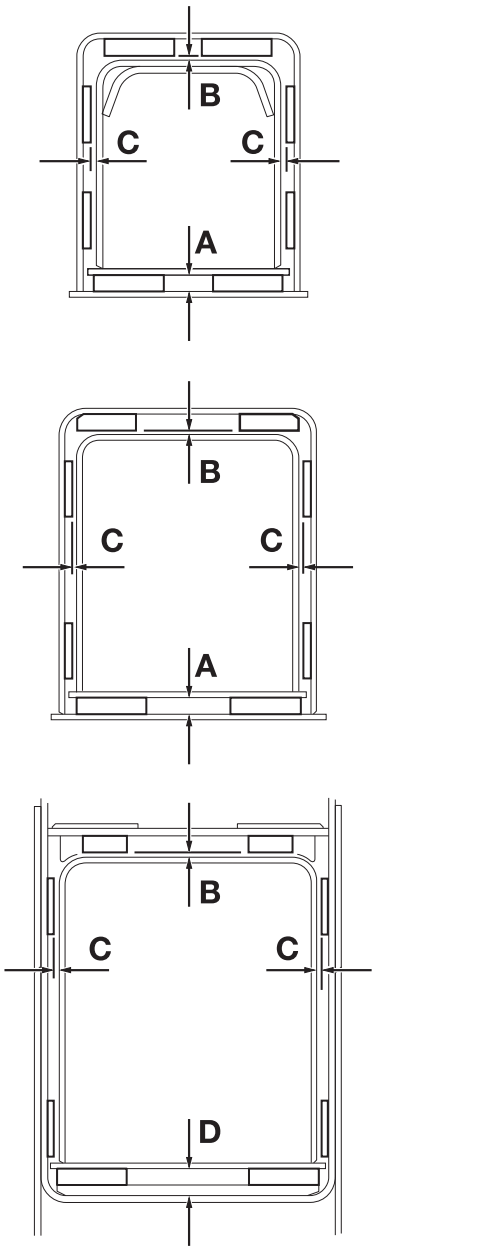


Fig 350. 4 Stage Boom

Dimension ⇒ *Fig 350. (340)*	Maximum Gap
B	3mm (0.12in)
C	1.5mm (0.06in)
D	37mm (1.45in)

Table 56. Maximum Gap

Dimension ⇒ *Fig 350. (340)*	Maximum Gap
A	22mm (0.87in)

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Wear Pad Clearance - 5 Stage Boom

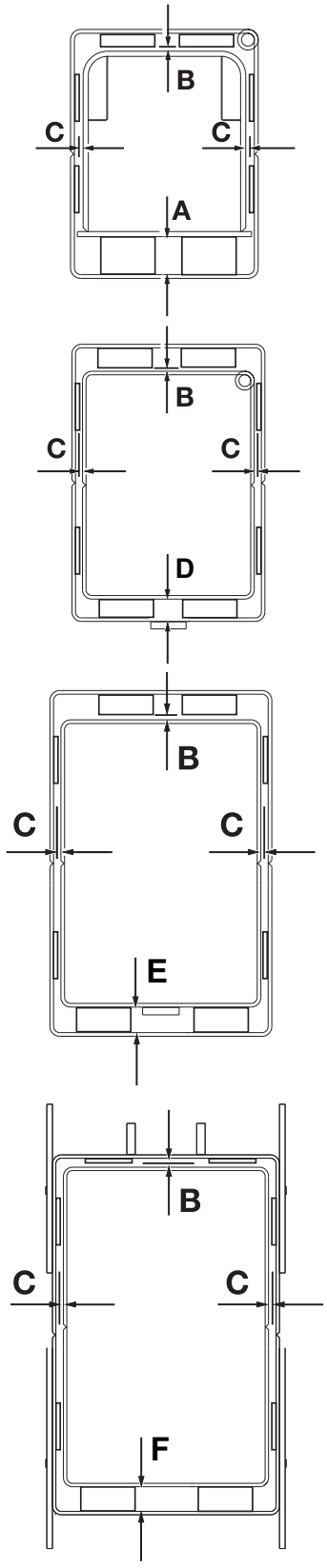


Fig 351. 5 Stage Boom

Table 57. Maximum Gap

Dimension ⇒ *Fig 351. (341)*	Max. Gap	Min. Gap
A	59mm (2.32in)	55mm (2.17in)
B	3mm (0.12in)	-
C	1.5mm (0.06in)	-
D	34mm (1.33in)	32mm (1.26in)
E	40mm (1.57in)	38mm (1.50in)
F	44mm (1.73in)	42mm (1.65in)

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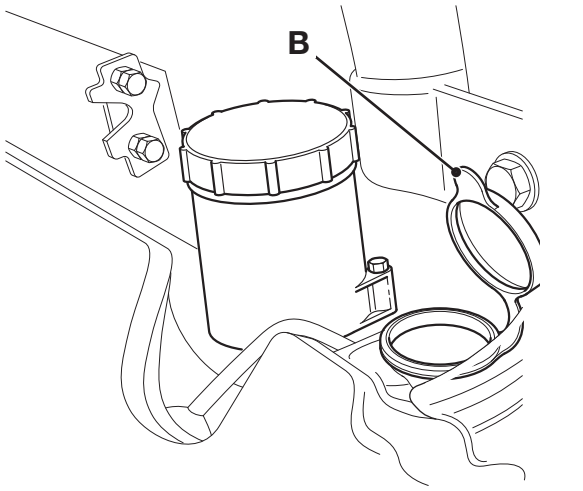
Windscreen Washer

Checking the Level

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

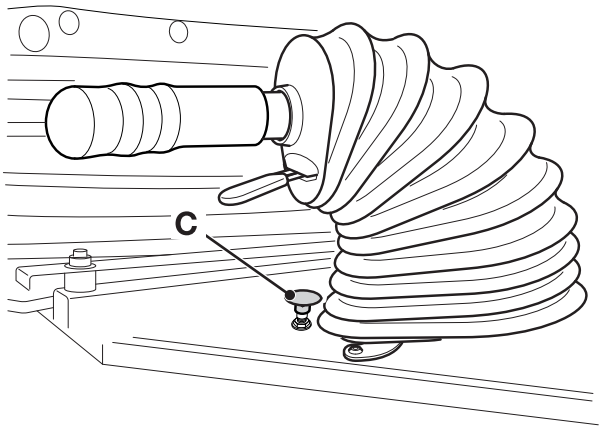
2 The windscreen washer filler **B** is in the panel in front of the cab. To gain access, pull release knob **C** to open the panel.

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



430780-B3

Fig 352.



A347580A-1

Fig 353.

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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.

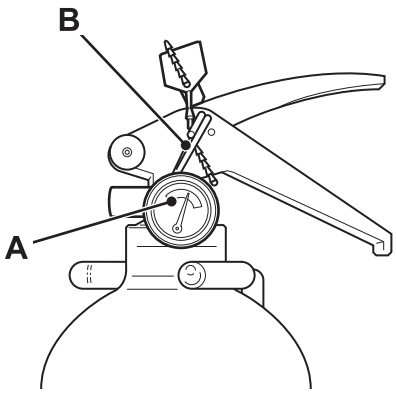


Fig 354.

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Optional Attachments

Introduction

⚠ WARNING

Use only the JCB approved attachments that are specified for your machine. Operating with non-specified attachments can overload the machine, causing possible damage and machine instability which could result in injury to yourself or others.

The use of non-approved attachments could invalidate your warranty.

2-4-5-2_1

⚠ CAUTION

If you have an attachment which is not covered in the Operator Manual do not install it, use it or remove it until you have obtained, read and understood the pertinent information. Install attachments only on the machines for which they were designed.

5-5-1-1_2

A wide range of optional attachments are available to increase the versatility of your machine. Only JCB approved attachments are recommended for use with your machine. Consult your JCB Distributor for the full list of approved attachments available.

This part of the manual includes general information on attachment operation and instructions for installation and removal of attachments.

Some attachments are supplied complete with instructions on safety, installing and removing, operation and maintenance. Read and fully understand the information before fitting, using and servicing the attachment. If there is anything you do not understand, ask your JCB Distributor.

Before using any attachment, read again ***Working With The Machine*** in the Operation section and consider how the attachment is going to affect operational safety. With the attachment fitted, there may be changes in the machine's centre of gravity or overall dimensions. This could have an effect on, for example, machine stability, the gradients on which it is safe to operate or the safe distance from power lines.

Practice using attachments off the job before working with them for the first time.

JCB attachments are designed and manufactured specifically to suit the machine's hydraulic system, mounting arrangements and safe load requirements. Attachments which are not designed for use with this machine may cause damage and create safety hazards for which JCB cannot be held responsible. In addition the machine's warranty and any other legislative compliance may be affected by the use of non JCB approved attachments.

If your machine needs the hydraulic system adapting to facilitate the use of auxiliary attachments, you must consult your distributor. Only suitably qualified personnel must re-route hydraulic hoses.

All optional attachments will have limits on their operation. i.e. lifting capacity, speeds, hydraulic flow rates, etc. Always check in the literature supplied with the attachment or in the Specification section of this manual. Some specification limits may also be displayed on the attachments Data/Rating Plate.

Note: *Some universal/Q-Fit optional attachments will not be suitable for use on the 550/560-80 machine - make sure to check with your JCB Distributor.*

⚠ CAUTION

Some attachments may contact parts of the machine when in the fully folded position. Take extra care to avoid damage to the machine.

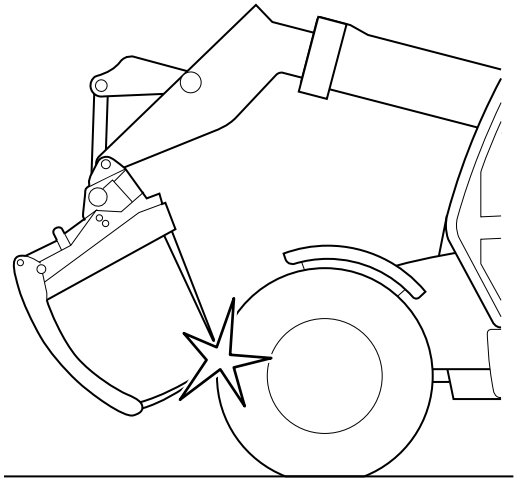
3-4-1-4

Attachments for your Machine

⚠ CAUTION

Some attachments (e.g. muck fork/push-off) can cause damage to the front tyres when the boom is lowered and the carriage is tilted forward. Exercise caution when lowering the boom with the carriage tilted forward when a muck fork/push-off type attachment is fitted.

5-5-1-9



382971-1

Fig 355.

⚠ CAUTION

If you have an attachment which is not covered in the Operator Manual do not install it, use it or remove it until you have obtained, read and understood the pertinent information. Install attachments only on the machines for which they were designed.

5-5-1-1_2

All standard machines are fitted with a Q-Fit carriage.

If the Q-Fit Carriage is changed or modified it may alter the setting of the Load Moment Indicator. Always consult your JCB distributor.

Attachments will help increase the productivity of your machine, for more information contact your JCB Distributor.

Remember, do not operate attachments until you have read and fully understand the attachment operating instructions.

For the Sideshift Carriage, Fork Mounted Hook, Extension Jib and Roof Truss Jib, the information in this book includes installation/removal, operation and routine maintenance.

For other attachments, please refer to the manufacturer's manual for the attachment (if supplied). General installation and removal procedures for other attachments are, however, included here.

Important: *Do not operate attachments until the hydraulic oil has reached its normal working temperature.*

Important: *Do not use this machine in conjunction with a sweeper/collector unless the attachment is connected to optional high flow equipment auxiliary connections. Allow the hydraulic system to cool for 30 minutes between each period of use.*

⚠ CAUTION

Do not extend the boom when an attachment is connected to the high flow auxiliary connectors (if fitted). Severe damage to the hoses will result.

0054_2

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Connecting/Disconnecting Hydraulic Hoses

T4-004_2

Introduction

⚠ 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

Some attachments are hydraulically powered. The following procedures show how to connect and disconnect the hydraulic hoses safely.

Connecting the Hydraulic Hoses

1 Make the machine safe. Refer to ***Routine Maintenance, Prepare the Machine for Maintenance***.

2 Vent the hydraulic system. Refer to ***Routine Maintenance, Releasing the Hydraulic Pressure***.

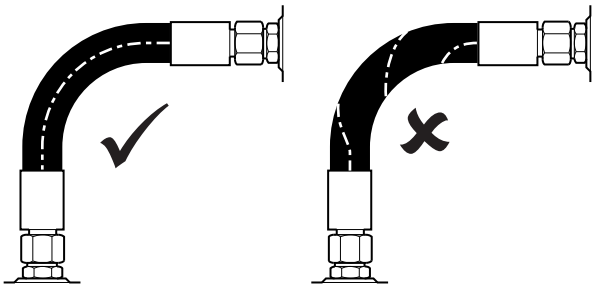
3 If necessary, remove the blanking caps.

4 Check the hoses and adaptors for damage. Refer to ***Routine Maintenance, Checking for Damage***.

5 Connect the hoses.

If the hoses have quick releases couplings, refer to ***Quick Release Couplings***.

a Make sure that the hose is not twisted. Pressure applied to a twisted hose can cause the hose to fail or the connections to loosen.



T037400

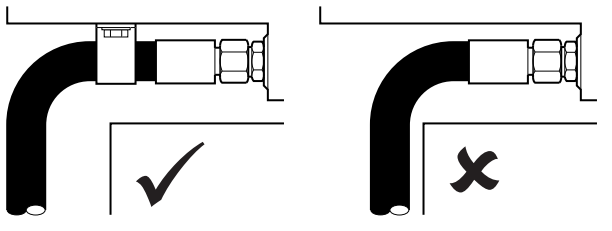
Fig 356.

b Make sure that the hose does not touch hot parts. High ambient temperatures can cause the hose to fail.

c Make sure that the hose does not touch parts which can rub or cause abrasion.

d Use the hose clamps (where possible) to support long hose runs and keep the hoses away from moving parts, etc.

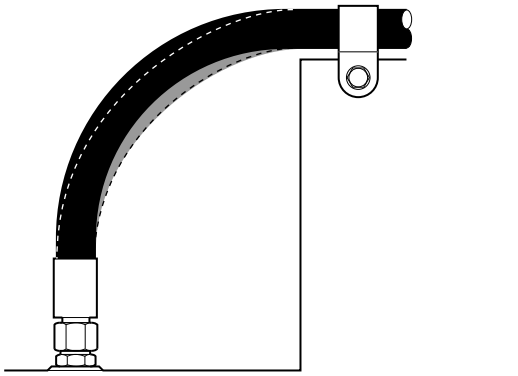
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T037420

Fig 357.

To allow for length changes when the hose is pressurised, do not clamp at the bend. The curve absorbs the change.



T037410

Fig 358.

6 Check for leaks.

a Start the engine.

b Operate the related control to increase the pressure in the hydraulic system.

c Stop the engine then remove the starter key.

d Check for indications of leakage at the hose connections. Correct, as necessary.

Disconnecting the Hydraulic Hoses

1 Make the machine safe. Refer to ***Routine Maintenance, Prepare the Machine for Maintenance***.

2 Vent the hydraulic system. Refer to ***Routine Maintenance, Releasing the Hydraulic Pressure***.

3 Disconnect the hoses.

If the hoses have quick releases couplings, then refer to ***Quick Release Couplings***.

4 Check the hoses and adaptors for damage. Refer to ***Routine Maintenance, Checking for Damage***.

5 If necessary, install the blanking caps

6 Check for leaks.

a Start the engine.

b Operate the related control to increase the pressure in the hydraulic system.

c Stop the engine then remove the starter key.

d Check for indications of leakage at the hose connections. Correct, as necessary.

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Quick Release Couplings

⚠ WARNING

The external surfaces of the couplings must be clean before connecting or disconnecting. Ingress of dirt will cause fluid leaks and difficulty in connecting or disconnecting. You could be killed or seriously injured by faulty Quick Release Couplings.

2-4-1-15

Flat face quick release couplings allow the operator to remove and install attachments swiftly and efficiently. Generally, your machine pipework will be fitted with a female coupling **A** and a male coupling **B**. The optional attachment hoses will also be fitted with a female coupling **A** and a male coupling **B**. ⇒ *Fig 359. (🗋 350)*.

The quick release couplings should be trouble free and relatively easy to connect and disconnect, provided they are kept clean and used correctly. The recommendations listed below should always apply when using flat face quick release couplings.

Finally, please read the correct fitting and releasing procedures before you install or remove any optional attachment fitted with quick release couplings.

Essential Do's

- 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.
- Always wipe the two mating faces clean before connecting.
- Use caps and plugs when the couplings are disconnected.
- Always align the external locking ball (if used) with the notch in the locking sleeve and then pull the locking sleeve back fully to disconnect.
- If a coupling sticks, first check that pressure has been released. Ensure the locking ball and notch in the locking sleeve are aligned, pull back the sleeve and twist the couplings apart. Sticking is normally caused by dirt in the coupling or physical damage due to abuse.
- Connect and disconnect new couplings two or three times to work the PTFE seals. Sometimes a new coupling will stick if the seal has not been worked.
- When fitting couplings, only apply the spanner or grips to the hexagon and nowhere else.
- Avoid damage to the coupling faces. Burrs and scratches cause damage to the seals and cause leaks. They can also impede connection and disconnection of the couplings.
- Periodically lubricate the internal locking balls on the female half of the coupling with silicone grease.

Essential Don'ts

- Never attempt to reconnect using a damaged half coupling as this will destroy the seals in the mating half and necessitate replacement of both halves.
- Do not leave the coupling where it may be run over by a vehicle or otherwise crushed - this will distort the sleeve and prevent connection and disconnection.
- Never try to turn the sleeve when the coupling is disconnected since this will cause the locking ball to jam under the locking sleeve and damage the coupling.
- Never try to strip the coupling down, there are no user serviceable parts. If the coupling is damaged it should be replaced with a new one. See coupling guides for a reference.
- Never hit the centre poppet of the coupling to try and release locked in pressure. This can cause irreparable damage to the coupling and serious injury.
- When fitting couplings, never clamp on the sleeve of the female or nose of the male - this will cause distortion and/or damage.
- Never subject the couplings to external forces, especially side load. This can reduce the life of the coupling or cause failure.
- Never allow the torsional forces transmitted from hoses to unscrew/screw together couplings.
- Never use a coupling as a plug.
- Do not connect and disconnect with pressure in the line unless the coupling type is specifically designed to do so.

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Connecting Quick Release Couplings

1 Remove any residual hydraulic pressure trapped in the service line hose.

2 Wipe the two faces of the male and female couplings and make sure they are clean.

3 Make sure that ball **C** in the female coupling is located in one of its slots.

4 Fit the male coupling into the female coupling.

5 Where applicable, rotate sleeve **E** half a turn and make sure that the locking ball **C** does not align with the slot **D**.

Disconnecting Quick Release Couplings

1 Remove any residual hydraulic pressure trapped in the service line hose.

2 Where applicable, align the slot **D** with ball **C**.

3 Pull back sleeve **E** to release the coupling.

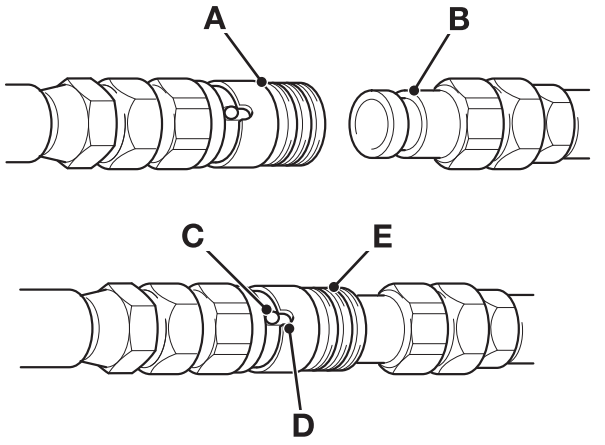


Fig 359.

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Q-Fit Attachments

Mechanical Pin Locking Option

P5-4010

Installing Attachments

⚠ WARNING

Keep other people clear of the area while you engage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed. The machine loading limits at different boom positions are shown on the Load Charts in the cab.

5-5-1-2_1

Read the information given in the following pages or the attachment manual. Pay particular attention to the safety notices and any specific notes about handling and installing.

1 Position the attachment:

- **a** Make sure the attachment is on firm, level ground.
- **b** Make sure the attachment will not tip over.

2 Remove existing attachment. Refer to ***Removing Attachments***.

3 Engage the Attachment.

- **a** Ensure that the carriage lock pins **A** are withdrawn.
- **b** Use the controls to line up the carriage with the attachment and just below the attachment hook plates **B**.
- **c** Engage the park brake, set the transmission to neutral.
- **d** Using the boom controls, engage the support bar on the carriage into the hook plates on the attachment. Ensure that both hook plates are engaged equally.
- **e** Lift and tilt the carriage back, to line up the locking holes in the carriage with those in the attachment.

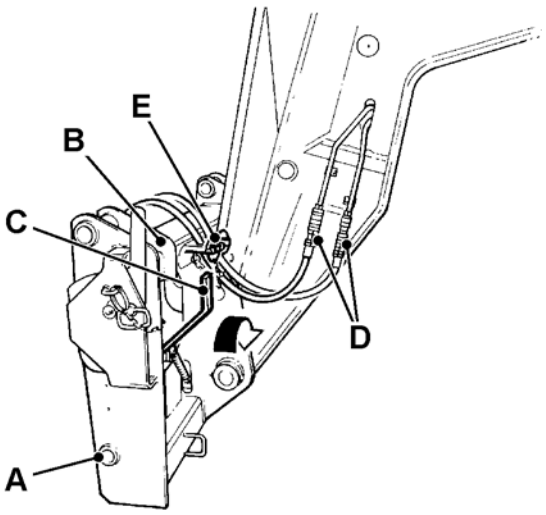
4 Lower the attachment to the ground.

5 Stop the engine. Remove the starter key.

6 At the carriage, operate the manual locking lever **C** to engage the locking pins. Ensure that the locking pins are fully engaged. If a second person is to do this job keep your hands and feet away from the controls until he is clear of the machine.

7 If the attachment is hydraulically operated read ***Connecting/Disconnecting Hydraulic Hoses***, then connect the hose(s) **D**.

8 Secure the hydraulic hose(s) to the carriage with locking pins **E**.



275191-2

Fig 360.

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Removing Attachments

⚠ WARNING

Keep other people clear of the area while you disengage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed.

5-5-1-3_1

Read the information given in the following pages or the attachment manual. Pay particular attention to the safety notices and any specific notes about removing the attachment.

Note: *Deposit Q-Fit attachments on firm, level ground whenever possible. This will make later refitting easy and safe.*

1 Park the machine on firm level ground, apply the park brake and select the transmission to neutral.

2 Lower the attachment to the ground.

3 If the attachment is hydraulically operated read ***Connecting/Disconnecting Hydraulic Hoses***, then disconnect the hose(s) **D**.

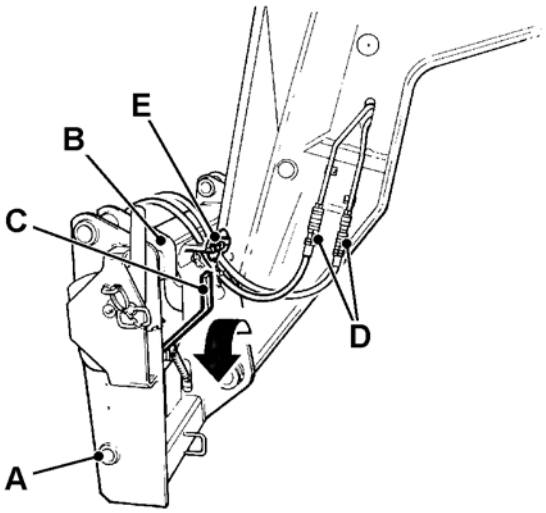
4 Release the attachment hydraulic hoses from the carriage by removing locking pins **E**.

5 Move the locking lever **C** to the unlock position to disengage the locking pins **A**.

6 Start the engine.

7 Tilt the carrier forward slowly to withdraw the lower end of the carrier from the attachment. Then lower the boom slowly to withdraw the carrier from the attachment hook plates **B**.

8 Carefully reverse the Loadall away from the attachment (or retract the boom).



275191-3

Fig 361.

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Hydraulic Pin Locking Option

P5-4011_2

The hydraulic pin locking option allows attachments to be installed or removed without leaving the cab.

Installing Attachments

⚠ WARNING

Keep other people clear of the area while you engage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed. The machine loading limits at different boom positions are shown on the Load Charts in the cab.

5-5-1-2_1

⚠ DANGER

Do not retract the locking pins when the attachment is raised, the attachment could fall and kill or seriously injure someone. Only retract the locking pins after the attachment has been placed on the ground.

5-5-1-8

Read the information given in the following pages or the attachment manual. Pay particular attention to the safety notices and any specific notes about handling and installing.

1 Position the attachment:

- **a** Make sure the attachment is on firm, level ground.
- **b** Make sure the attachment will not tip over.

2 Remove existing attachment. Refer to ***Removing Attachments***.

3 Move the lever of the hydraulic pin locking isolation valve (if fitted) to the horizontal position **A**.

4 Engage the Attachment.

- **a** Operate the auxiliary control to withdraw the carriage lock pins.
- **b** Use the controls to line up the carriage with the attachment and just below the attachment hook plates **B**.
- **c** Engage the park brake, set the transmission to neutral.
- **d** Using the boom controls, engage the support bar on the carriage into the hook plates on the attachment. Ensure that both hook plates are engaged equally.
- **e** Lift and tilt the carriage back, to line up the locking holes in the carriage with those in the attachment.
- **f** Operate the auxiliary control to engage the locking pins.

⚠ DANGER

The hydraulic pin locking isolation valve must returned to the fully closed position otherwise the locking pins could be inadvertently disengaged.

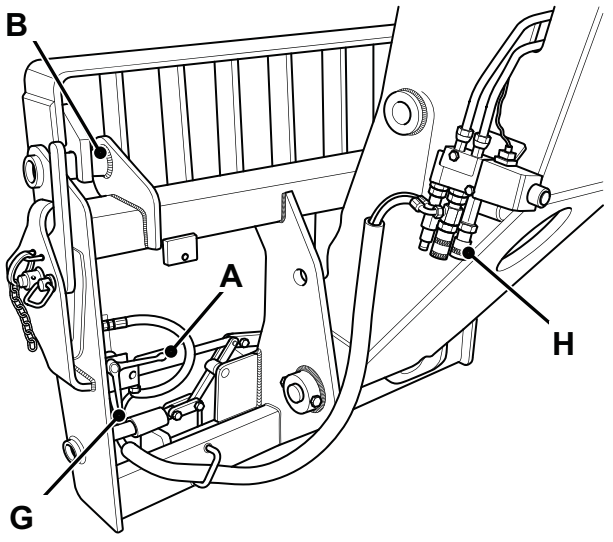
5-5-3-7

5 Lower the attachment to the ground.

6 Stop the engine. Remove the starter key.

7 Move the lever of the hydraulic pin locking isolation valve (if fitted) to the vertical position **G**, in this position the locking pins are isolated and the auxiliary circuit is active.

8 If the attachment is hydraulically operated read ***Connecting/Disconnecting Hydraulic Hoses***, then connect the hose(s) to the couplings **H**.



S270660

Fig 362.

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Removing Attachments

⚠ WARNING

Keep other people clear of the area while you disengage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed.

5-5-1-3_1

⚠ DANGER

Do not retract the locking pins when the attachment is raised, the attachment could fall and kill or seriously injure someone. Only retract the locking pins after the attachment has been placed on the ground.

5-5-1-8

Read the information given in the following pages or the attachment manual. Pay particular attention to the safety notices and any specific notes about removing the attachment.

Note: *Deposit Q-Fit attachments on firm, level ground whenever possible. This will make later refitting easy and safe.*

1 Park the machine on firm level ground, apply the park brake and select the transmission to neutral.

2 Lower the attachment to the ground.

3 If the attachment is hydraulically operated read ***Connecting/Disconnecting Hydraulic Hoses***, then disconnect the hose(s) from the couplings **H**.

4 Move the locking pin hydraulic isolation valve (if fitted) to the horizontal position **A**.

5 Operate the auxiliary control.

6 Tilt the carriage forward slowly to withdraw the lower end of the carriage from the attachment. Then lower the boom slowly to withdraw the carriage from the attachment hookplates **B**.

7 Carefully reverse the machine away from the attachment (or retract the boom).

8 Lower the boom to the ground.

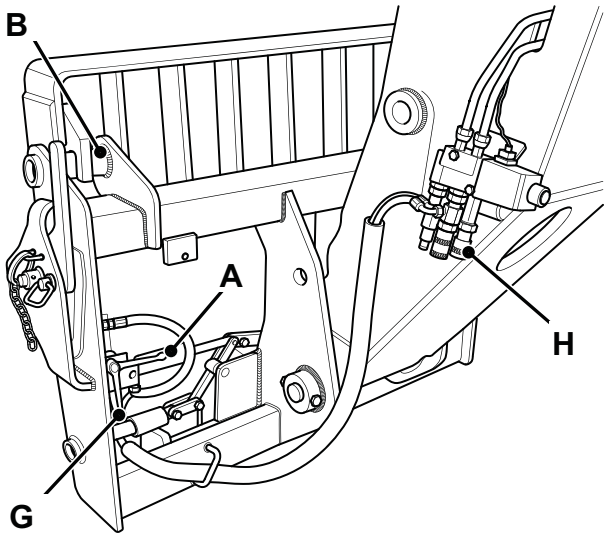
9 Stop the engine. Remove the starter key.

⚠ DANGER

The hydraulic pin locking isolation valve must returned to the fully closed position otherwise the locking pins could be inadvertently disengaged.

5-5-3-7

10 Move the lever of the locking pin hydraulic isolation valve (if fitted) to the vertical position **G**, in this position the locking pins are isolated and the auxiliary circuit is active.



S270660

Fig 363.

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Extension Jib

P5-4004

This is a Q-Fit attachment. It gives your machine greater reach and height. This attachment is supplied with test certificates for its fabrication, its hook and its shackle. Its Safe Working Load is stamped on a plate mounted on the attachment. See ***Working With The Machine*** (OPERATION Section).

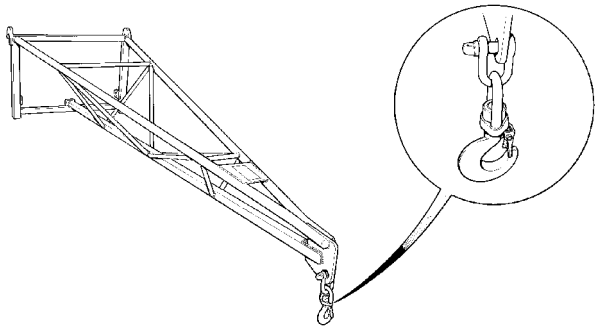


Fig 364.

Safety

P5-4001

Obey all the safety instructions given in the main part of this book, plus the ones given in this section. Use this attachment only if it carries up to date test certificates.

Installing/Removing

⚠ WARNING

The attachment is heavy. Take care when lifting and handling it.

Use suitable lifting equipment. Make sure the lifting equipment is in good condition. Make sure the lifting equipment complies with all pertinent regulations.

Wear gloves and safety shoes.

4-4-1-5_1

See ***Installing and Removing Q-Fit Attachments*** at the beginning of this section. Installing will be easier if the Extension Jib is rested on wooden blocks. Store the attachment carefully to prevent damage and corrosion.

Operation

P5-4002

Observe the following precautions when using this attachment.

⚠ WARNING

This attachment has a maximum Safe Working Load. Do not exceed the SWL.

Do not exceed the machine stability limits shown on the Load Chart(s) in the cab.

5-5-4-11

⚠ CAUTION

Load and unload on firm, level ground. Always be alert for possible hazards. Take special care when turning or reversing.

5-2-4-7

- Always check the appropriate flip chart in the cab before lifting or manoeuvring a load with this attachment.
- Always level the machine using the sway control or stabilizers (if fitted) before operating the attachment. Reposition the machine if a level position cannot be achieved.
- Always use lifting tackle which is suitable for the job, in good condition and proof tested where necessary.
- Always sling the load safely and in accordance with any local regulations.
- Always ensure that the hook safety catch has sprung back to prevent the sling(s) from slipping off the hook.
- Always lift a slung load carefully, to avoid 'snatching' the sling(s).
- Always keep yourself and other people clear of a suspended load, especially from beneath the load.
- Always check for clearance before manoeuvring the machine with this attachment installed. Remember that the effective length of the boom is increased when this attachment is installed.
- Always manoeuvre the machine carefully when carrying a suspended load. Keep the load as low to

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the ground as possible. If necessary, use guide ropes to prevent the load from swinging.

– Always travel in 1st gear at walking speed when carrying a suspended load. Wherever possible, travel on firm, level ground. Avoid rough or excessively undulating ground.
– Never carry suspended loads on public roads.
– Always be aware of the affects of wind velocity on the load being handled.

Maintenance

P5-4003

Daily

Clean with the rest of the machine.

Check for damage. Ensure that the hook safety catch is in good working order.

As Required or At Least Annually

All lifting equipment including this attachment may 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 many countries to meet and comply with local legislation and for insurance purposes.

Check with your local JCB distributor for further advice.

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Fork Mounted Hook

P5-4005

The Fork Mounted Hook allows the Loadall to carry slung loads with safety. It incorporates a swivel hook with a spring-loaded safety catch. This attachment is supplied with test certificates for its fabrication and its hook. Its Safe Working Load is stamped on a plate mounted on the attachment. See ***Working With The Machine*** (OPERATION Section).

Safety

P5-4001

Obey all the safety instructions given in the main part of this book, plus the ones given in this section. Use this attachment only if it carries up to date test certificates.

Installing

1 Space the forks, equally on either side of the machine centreline, so that the mounting sockets **A** can be slid onto them. Fully tighten the fork clamping screws to prevent movement.

2 Install the attachment.

⚠ WARNING

The attachment is heavy. Take care when lifting and handling it.

Use suitable lifting equipment. Make sure the lifting equipment is in good condition. Make sure the lifting equipment complies with all pertinent regulations.

Wear gloves and safety shoes.

4-4-1-5_1

a Remove lynch pin **B** and locking bar **C**.

b Slide the attachment over the forks so that the rear of the attachment butts against the heels of the forks.

c Refit locking bar **C** and secure with lynch pin **B**.

d Ensure both mounting brackets are installed securely.

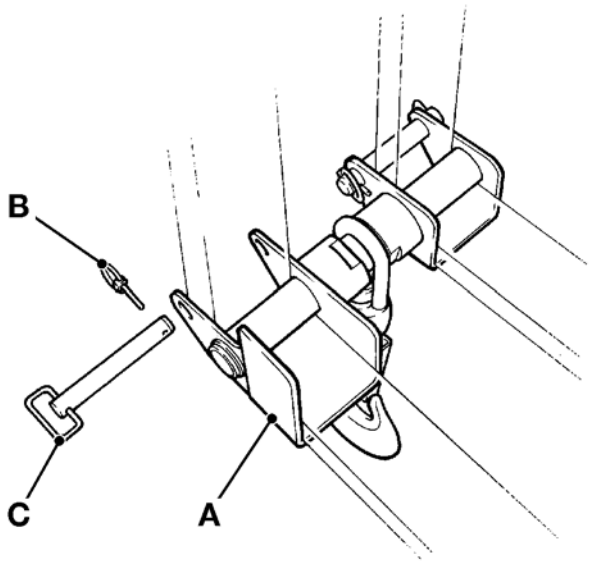


Fig 365.

Removing

1 Lower the attachment so that it just clears the ground. Engage the park brake and stop the engine.

2 Remove the attachment.

⚠ WARNING

The attachment is heavy. Take care when lifting and handling it.

Use suitable lifting equipment. Make sure the lifting equipment is in good condition. Make sure the lifting equipment complies with all pertinent regulations.

Wear gloves and safety shoes.

4-4-1-5_1

a Remove lynch pin **B** and locking bar **C**.

b Carefully slide the attachment off the forks.

c Refit locking bar **C** and secure with lynch pin **B**. Store the attachment carefully to prevent damage and corrosion.

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Operation

P5-4002

Observe the following precautions when using this attachment.

⚠ WARNING

This attachment has a maximum Safe Working Load. Do not exceed the SWL.

Do not exceed the machine stability limits shown on the Load Chart(s) in the cab.

5-5-4-11

⚠ CAUTION

Load and unload on firm, level ground. Always be alert for possible hazards. Take special care when turning or reversing.

5-2-4-7

- Always check the appropriate flip chart in the cab before lifting or manoeuvring a load with this attachment.
- Always level the machine using the sway control or stabilizers (if fitted) before operating the attachment. Reposition the machine if a level position cannot be achieved.
- Always use lifting tackle which is suitable for the job, in good condition and proof tested where necessary.
- Always sling the load safely and in accordance with any local regulations.
- Always ensure that the hook safety catch has sprung back to prevent the sling(s) from slipping off the hook.
- Always lift a slung load carefully, to avoid 'snatching' the sling(s).
- Always keep yourself and other people clear of a suspended load, especially from beneath the load.
- Always check for clearance before manoeuvring the machine with this attachment installed. Remember that the effective length of the boom is increased when this attachment is installed.
- Always manoeuvre the machine carefully when carrying a suspended load. Keep the load as low to the ground as possible. If necessary, use guide ropes to prevent the load from swinging.
- Always travel in 1st gear at walking speed when carrying a suspended load. Wherever possible, travel on firm, level ground. Avoid rough or excessively undulating ground.
- Never carry suspended loads on public roads.
- Always be aware of the affects of wind velocity on the load being handled.

Maintenance

P5-4003

Daily

Clean with the rest of the machine.

Check for damage. Ensure that the hook safety catch is in good working order.

As Required or At Least Annually

All lifting equipment including this attachment may 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 many countries to meet and comply with local legislation and for insurance purposes.

Check with your local JCB distributor for further advice.

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Sideshift Carriage

P5-4008

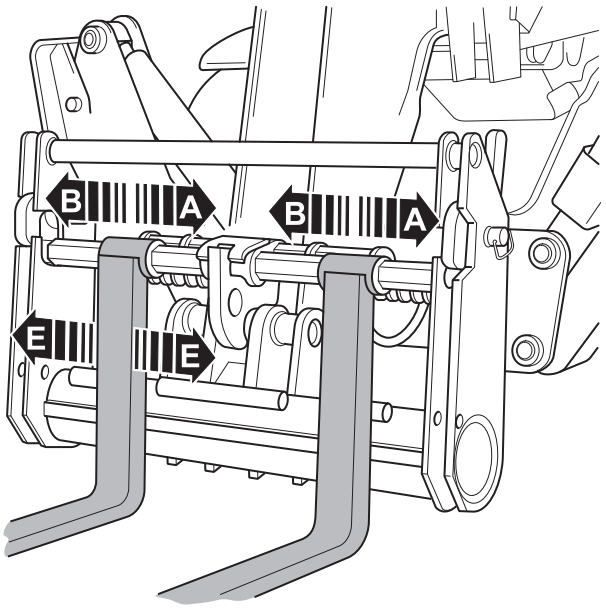
Operation

The sideshift carriage allows the operator to accurately position both forks simultaneously with 100mm (4in) of sideways movement with a load on the forks. The forks are controlled by the auxiliary control in the cab.

Operate the auxiliary controls as required to move the forks.

A Sideshift Left

B Sideshift Right



A280131-2

Fig 366.

Fork Spacing

⚠ WARNING

Loads can fall off incorrectly spaced forks. Always space the forks correctly for the load. Make sure the forks are completely under the load before lifting.

0028_1

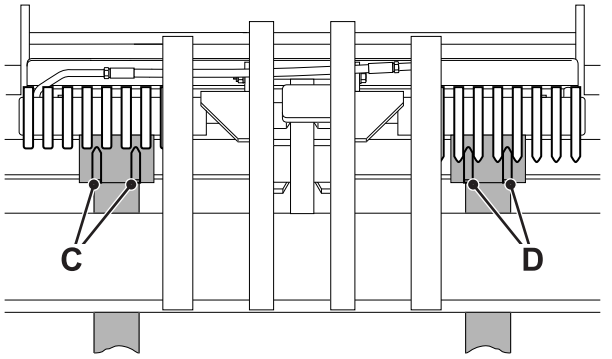
Fork spacing **E** may be adjusted to suit the load either hydraulically, using the auxiliary control, or manually.

Hydraulic Fork Spacing

1 Raise the boom and tilt the carriage forward until the left hand fork fingers **C** disengage from the cylinder, leaving the right hand fork fingers **D** engaged. ⇨ *Fig 367. (359)*.

2 Use the auxiliary control to sideshift the right hand fork only, as at **E**, in order to position the forks. ⇨ *Fig 366. (359)*.

3 Tilt the carriage back and make sure the left hand fork re-engages with the cylinder.



A373050-2

Fig 367. View from Rear of Carriage

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Manual Fork Spacing

⚠ WARNING

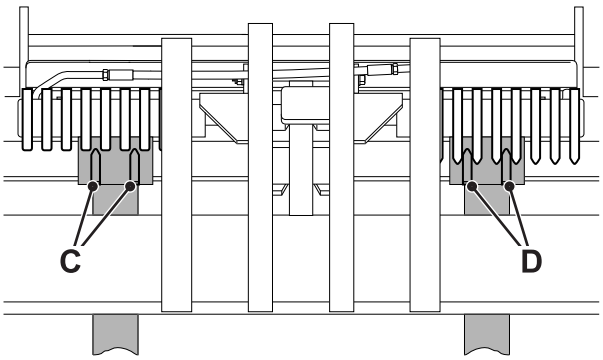
Forks are heavy. Take care when spacing forks or folding back the forks.

0002

1 Raise the boom and tilt the carriage forward until both left **C** and right **D** forks disengage from the cylinder. ⇒ *Fig 368. (🗋 360)*.

2 Manually position the forks as required.

3 Tilt the carriage back and make sure both forks re-engage with the cylinder.



A373050-2

Fig 368. View from Rear of Carriage

Installing the Sideshift Carriage

⚠ WARNING

Keep other people clear of the area while you engage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed. The machine loading limits at different boom positions are shown on the Load Charts in the cab.

5-5-1-2_1

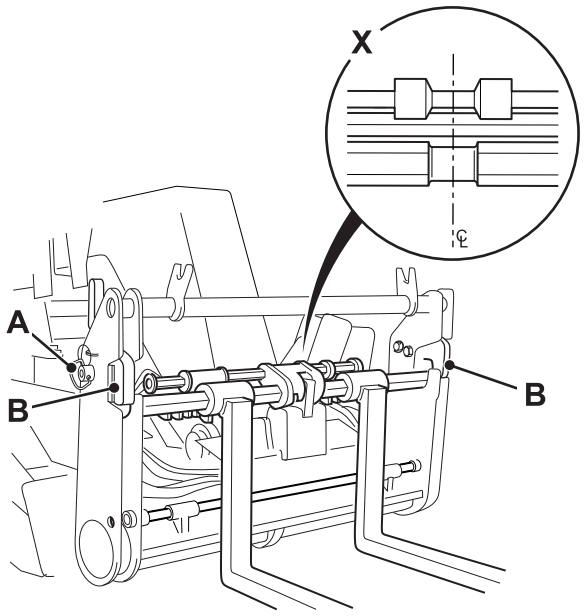
1 Make sure the attachment is on firm, level ground. Make sure the attachment will not tip over.

Pay particular attention to the safety notices and any specific notes about handling and installing. Refer to ***Q-Fit Attachments***.

2 Remove existing attachment, leave the Q-Fit carriage lock pin disengaged.

3 Withdrawn carriage locking pins **A**.

4 Use the controls to line up the carriage with the attachment and just below the attachment hook plates **B**.



325461-1

Fig 369.

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5 Engage the park brake, set the transmission to neutral.

6 Align the sections of the Sideshift attachment centrally as shown at **X**. ⇨ *Fig 369. (🗋 360)*.

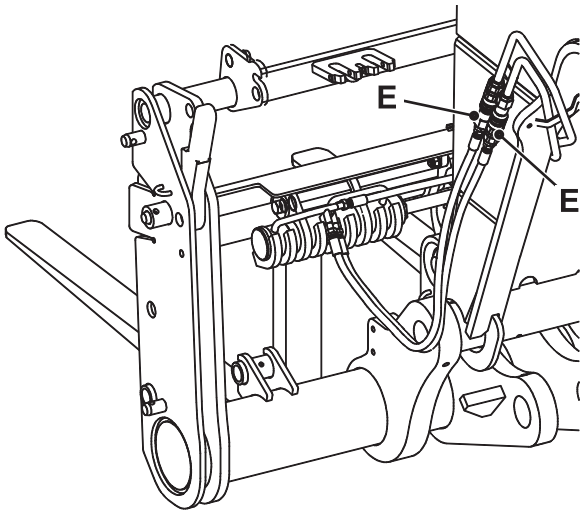
Note: *Protective cover removed for clarity.*

7 Use the boom controls to engage the support bar on the attachment into the hook plates **B** on the carriage. Ensure both hook plates engaged equally.

8 Ensure that the transmission is set to neutral, and that the park brake is on. Stop the engine. Remove the starter key.

9 Engage locking pins **A**. Ensure the pins are fully engaged, and secure with locking rings at both sides of the carriage.

10 Read ***Disconnecting/Connecting Hydraulic Hoses***, then connect the hoses **E**.



382010-2

Fig 370.

Removing the Sideshift Carriage

⚠ WARNING

Keep other people clear of the area while you disengage the attachment. If a second person is to be involved in this procedure, ensure that he keeps clear of the machine and attachment until signalled by you to proceed.

5-5-1-3_1

Deposit Q-Fit attachments on firm, level ground whenever possible. This will make later fitting easy and safe.

1 Lower the attachment to the ground.

Pay particular attention to the safety notices and any specific notes about removing the attachment. Refer to ***Q-Fit Attachments***.

2 Engage the park brake. Set the transmission to neutral. Stop the engine.

3 Read ***Disconnecting/Connecting Hydraulic Hoses***, then disconnect the hoses **E**.

4 Remove the lock rings and withdraw locking pins **A** at both sides of the carriage. ⇨ *Fig 369. (🗋 360)*.

5 Start the engine and tilt the carriage forward slowly to withdraw the lower end of the carriage from the attachment. Then lower the boom slowly to withdraw the carriage from the attachment hook plates **B**. Carefully reverse the machine away from the attachment or retract the boom.

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Maintenance

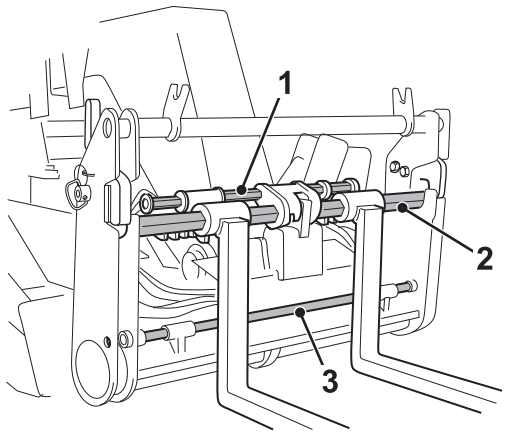
Daily

Clean with the rest of the machine.

Every 50 Hours

Grease the sideshift carriage in three places.

Note: *Protective cover removed for clarity.*



325820-2

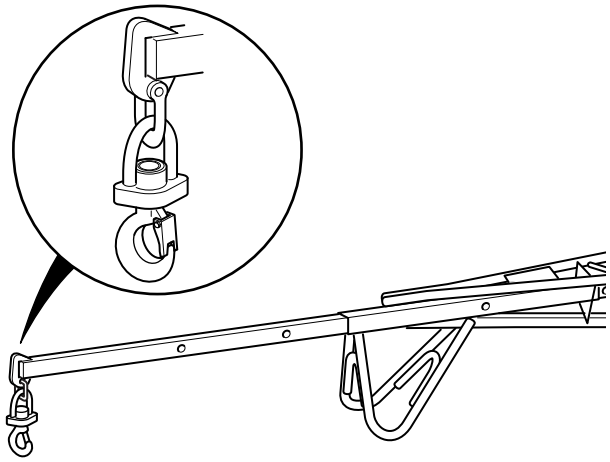
Fig 371.

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Roof Truss Jib

P5-4009

This is a Q-Fit attachment which gives your machine greater reach and height. This attachment is supplied with test certificates for its fabrication, its hook and its shackle. Its Safe Working Load is stamped on a plate mounted on the attachment. See ***Working with the Machine*** (OPERATION Section).



392020

Fig 372.

Safety

Obey all the safety instructions given in the main part of this book, plus the ones given in this section. Use this attachment only if it carries up to date test certificates.

Installing/Removing

⚠ WARNING

The attachment is heavy. Take care when lifting and handling it.

Use suitable lifting equipment. Make sure the lifting equipment is in good condition. Make sure the lifting equipment complies with all pertinent regulations.

Wear gloves and safety shoes.

4-4-1-5_1

⚠ WARNING

This attachment has a maximum Safe Working Load. Do not exceed the SWL.

Do not exceed the machine stability limits shown on the Load Chart(s) in the cab.

5-5-4-11

See ***Q-Fit Attachments*** at the beginning of this section. Installing will be easier if the Roof Truss Jib is rested on wooden blocks. Store the attachment carefully to prevent damage and corrosion.

Operation

P5-4002

Observe the following precautions when using this attachment.

⚠ WARNING

This attachment has a maximum Safe Working Load. Do not exceed the SWL.

Do not exceed the machine stability limits shown on the Load Chart(s) in the cab.

5-5-4-11

⚠ CAUTION

Load and unload on firm, level ground. Always be alert for possible hazards. Take special care when turning or reversing.

5-2-4-7

- Always check the appropriate flip chart in the cab before lifting or manoeuvring a load with this attachment.
- Always level the machine using the sway control or stabilizers (if fitted) before operating the attachment.

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Reposition the machine if a level position cannot be achieved.

- Always use lifting tackle which is suitable for the job, in good condition and proof tested where necessary.
- Always sling the load safely and in accordance with any local regulations.
- Always ensure that the hook safety catch has sprung back to prevent the sling(s) from slipping off the hook.
- Always lift a slung load carefully, to avoid 'snatching' the sling(s).
- Always keep yourself and other people clear of a suspended load, especially from beneath the load.
- Always check for clearance before manoeuvring the machine with this attachment installed. Remember that the effective length of the boom is increased when this attachment is installed.
- Always manoeuvre the machine carefully when carrying a suspended load. Keep the load as low to the ground as possible. If necessary, use guide ropes to prevent the load from swinging.
- Always travel in 1st gear at walking speed when carrying a suspended load. Wherever possible, travel on firm, level ground. Avoid rough or excessively undulating ground.
- Never carry suspended loads on public roads.
- Always be aware of the affects of wind velocity on the load being handled.

Extending the Jib

⚠ WARNING

Refer to the Load Chart in the cab for permissible loading for each position of the jib extension.

0085

The jib may be extended to one of four positions.

1 Remove the load and lower the jib to the ground so that the skid **A** is supporting the weight of the jib.

2 Remove lynch pin **B**, then pin **C**.

3 Move the jib extension to the required position: **D** (fully extended), **E**, **F** or **G** (fully retracted). Insert the pin **C** and secure with lynch pin **B**.

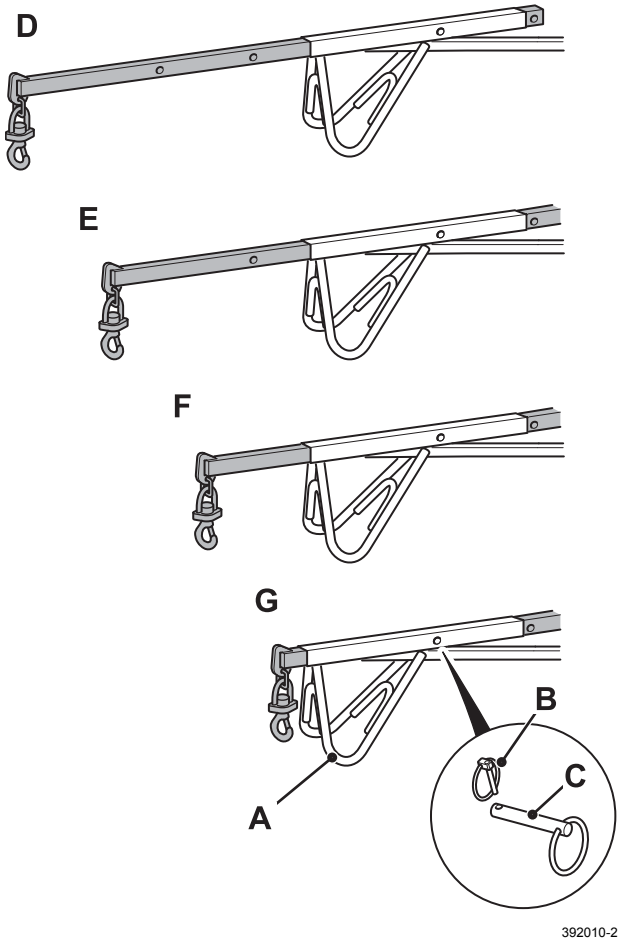


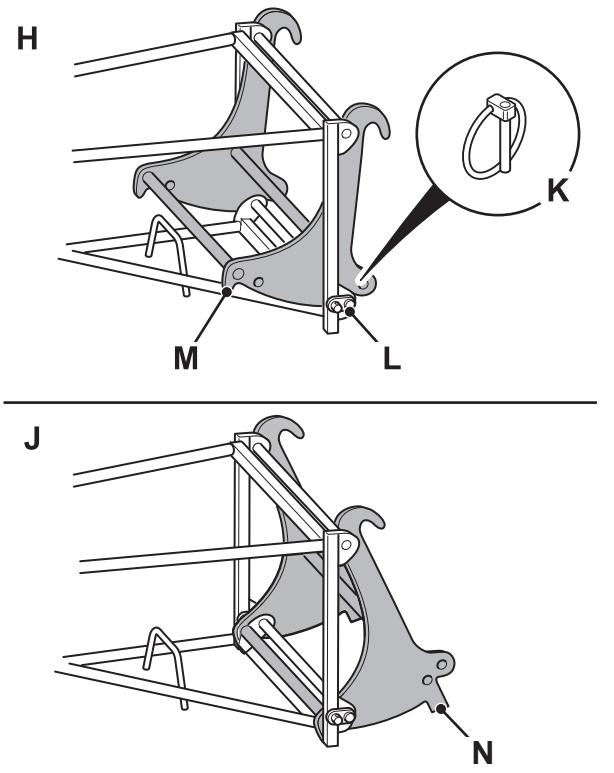
Fig 373.

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Changing the Jib Angle

The angle of the jib may be set in one of two positions, placing position as at **H** or travel position as at **J**.

Note: *When in the travel position, do not extend the boom and do not lift the boom more than 45°. See the flip chart in the cab.*



392080-1

Fig 374.

To change the jib position:

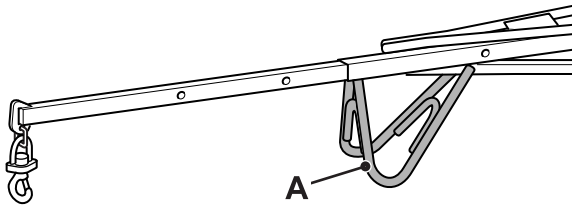
1 Remove the load and lower the jib to the ground so that the skid **A** is supporting the weight of the jib.

2 Remove lynch pin **K**, then bar **L**.

3 Using the tilt control in the cab, rotate the carriage until the holes line up in the required position.

Note: *Stops **M** and **N** prevent excessive movement of the jib.*

4 Insert the bar **L** and secure with lynch pin **K**.



392020-2

Fig 375.

Maintenance

P5-4003_2

Daily

Clean with the rest of the machine.

Check for damage. Ensure that the hook safety catch is in good working order.

As Required or At Least Annually

All lifting equipment including this attachment need regular inspection and testing by a competent person to ensure they are fit for purpose. Refer to ***Fit for Purpose Tests for Lifting Equipment (Routine Maintenance Section)***.

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Work Platforms

P5-4006_3

⚠ DANGER

Forks/Working Platform

Using the forks alone as a working platform is hazardous; you can fall off and be killed or injured. Never use the forks as a working platform.

5-1-5-3

The use of work platforms with this machine is subject to legislation which varies from territory to territory. It is the responsibility of the owner/operator and supplier of the work platform to ensure compliance with the relevant legislation in the relevant territory. In the case of uncertainty, guidance should be sought from the relevant local or government authority.

JCB supply integrated work platforms solely for use in Europe which comply with the requirements of European Directive 2006/42/EC. Contact your dealer for further details. Health and safety legislation also varies from territory to territory. Customers should check the latest health and safety legislation for the territory in which the work platform is to be used prior to operation.

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Specifications

Static Dimensions

531-70, 541-70

P5-5004

Note: *Dimensions relative to 15.5/80-24 tyres.*

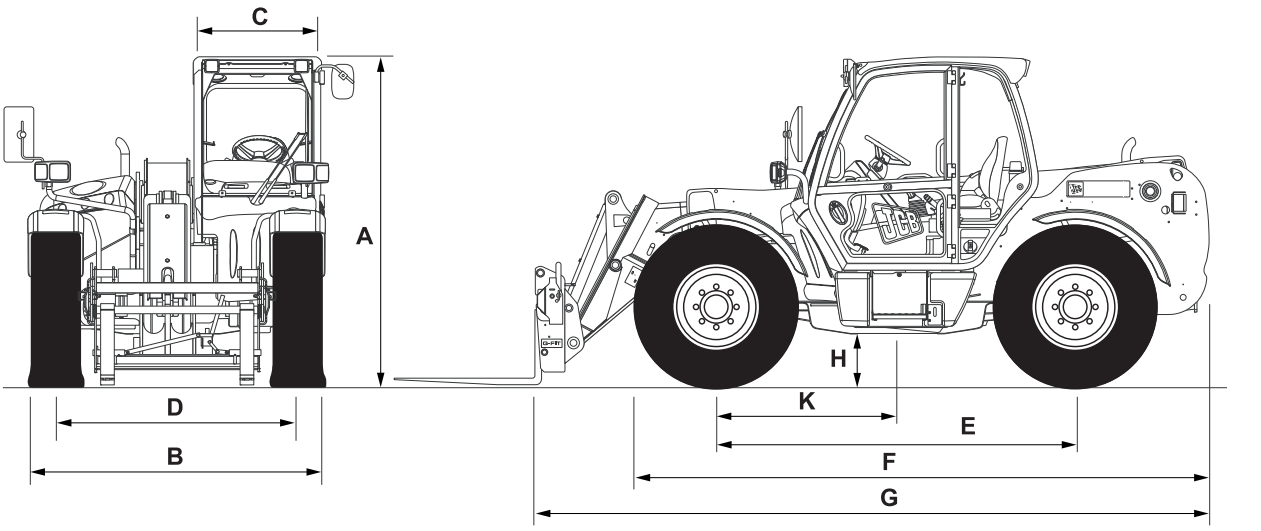


Fig 376.

Table 58.

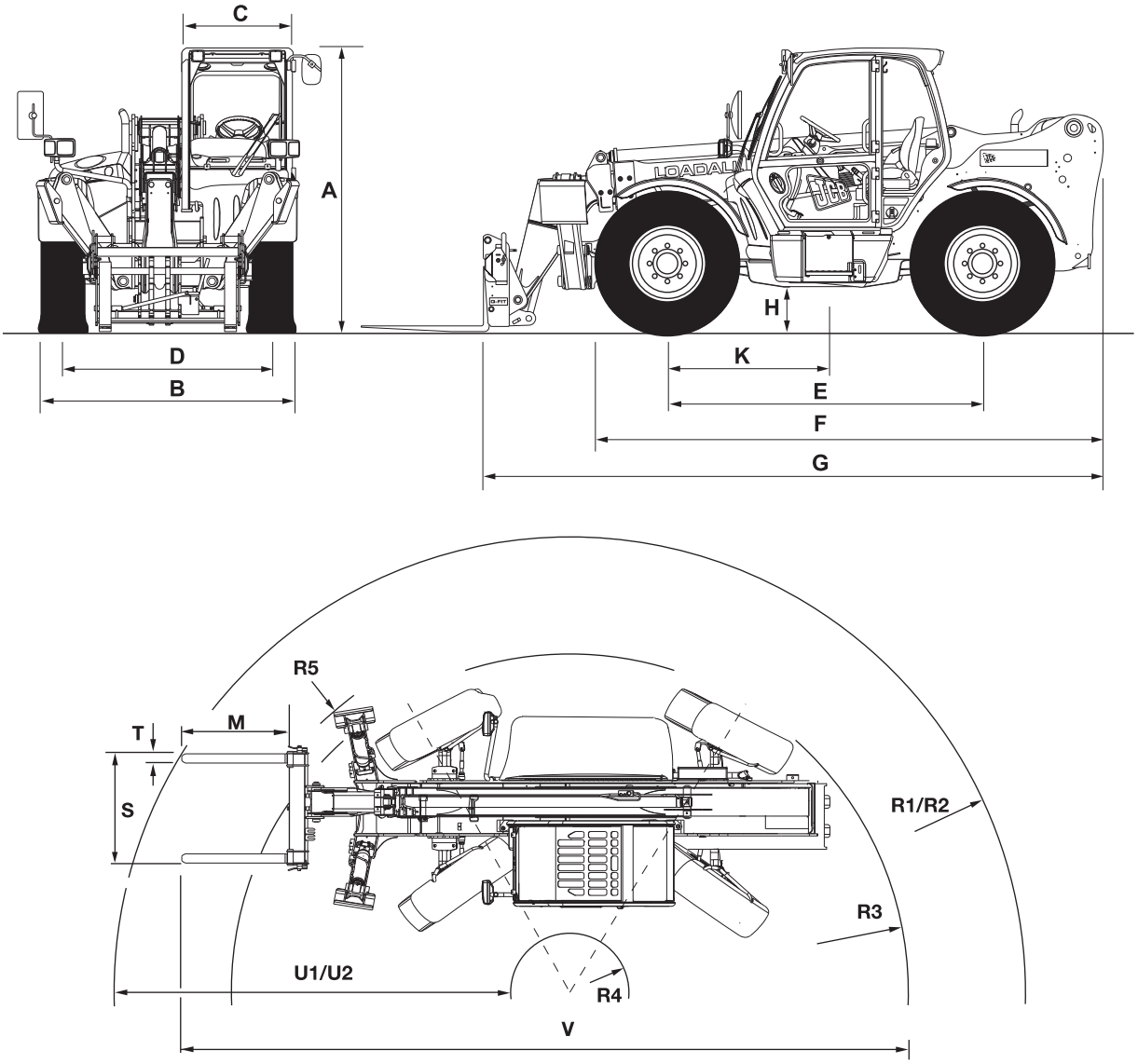
		531-70		541-70	
		mm	ft-in	mm	ft-in
A	Overall height	2490	8-2	2490	8-2
B	Overall width (over tyres)	2230	7-4	2230	7-4
C	Inside width of cab (between windows)	940	3-1	940	3-1
D	Front track	1810	5-11	1810	5-11
E	Wheelbase	2750	9-0	2750	9-0
F	Overall length to front tyres	4380	14-4	4380	14-4
G	Overall length to front of carriage	4990	16-4	4990	16-4
H	Ground clearance	400	1-4	400	1-4
K	Centre of gravity (unladen)	1420	4-8	1420	4-8
	Outside turn radius (over tyres)	3700	12-2	3700	12-2

Weight (unladen): Refer to ***Axle Weight Distribution***.

533-105

P5-5005

Note: *Dimensions relative to 15.5/80-24 tyres.*



416070-3

Fig 377.

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Table 59.

		533-105	
		mm	**ft-in**
A	Overall height	2490	8-2
B	Overall width (over tyres)	2290	7-5
C	Inside width of cab (between windows)	940	3-1
D	Front track	1870	6-1
E	Wheelbase	2750	9-0
F	Overall length to front tyres	4380	14-4
G	Overall length to front of carriage	5380	17-8
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1415	4-8
M		1067	3-6
		1200	3-11
R1	1067mm forks	4750	15-7
R2	1200mm forks	4864	16-0
R3		3700	12-2
R4		1190	3-11
R5		4040	13-3
S		1226	4-0
T		103	0-4
U1	1067mm forks	3560	11-8
U2	1200mm forks	3674	12-1
V	1067mm forks	7640	25-1

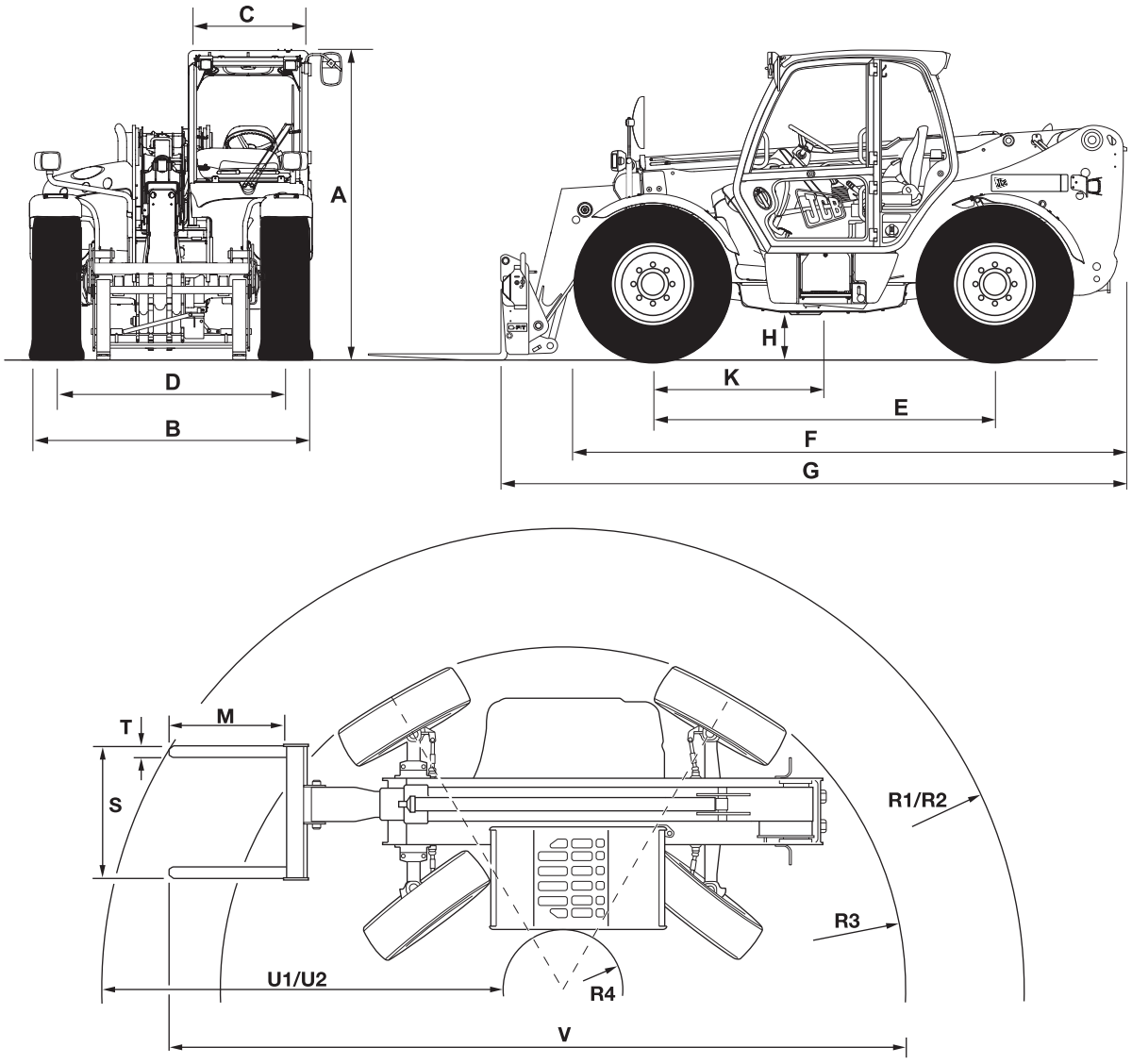
Weight (unladen): Refer to ***Axle Weight Distribution***.

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535-95

P5-5006

Note: *Dimensions relative to 15.5 R24 tyres.*



A345760-3

Fig 378.

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Table 60.

		535-95	
		mm	**ft-in**
A	Overall height	2490	8-2
B	Overall width (over tyres)	2290	7-6
C	Inside width of cab (between windows)	940	3-1
D	Front track	1870	6-1
E	Wheelbase	2750	9-0
F	Overall length to front tyres	4380	14-4
G	Overall length to front of carriage	4990	16-4
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1415	4-8
M		1067	3-6
		1200	3-11
R1	1067mm forks	4585	15-1
R2	1200mm forks	4700	15-5
R3		3700	12-2
R4		1190	3-11
S		1226	4-0
T		103	0-4
U1	1067mm forks	3395	11-2
U2	1200mm forks	3510	11-6
V	1067mm forks	7290	23-11

Weight (unladen): Refer to ***Axle Weight Distribution***.

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536-60

P5-5007

Note: *Dimensions relative to 440/70 R24 tyres.*

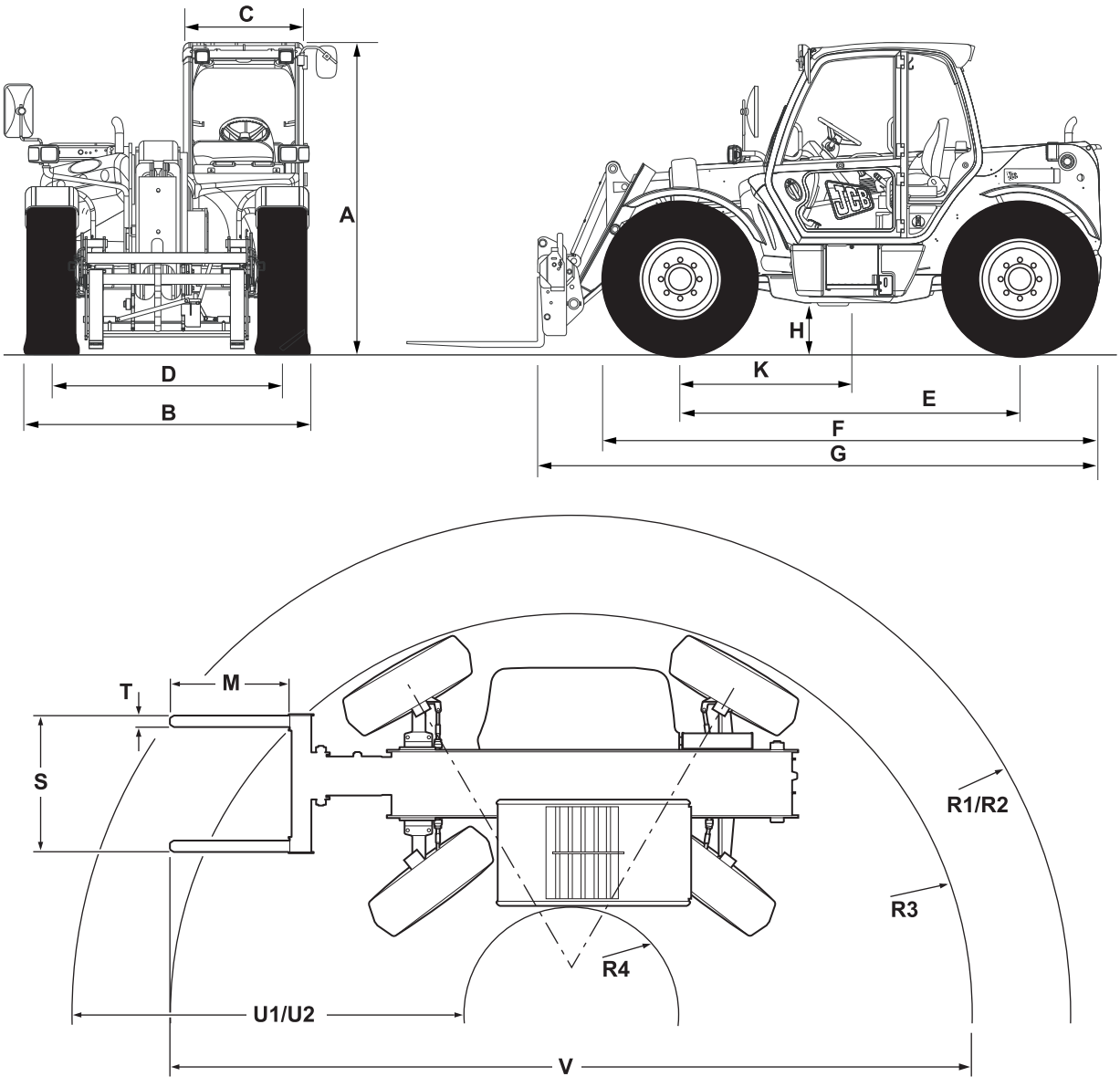


Fig 379.

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Table 61.

		536-60	
		mm	**ft-in**
A	Overall height	2490	8-2
B	Overall width (over tyres)	2280	7-5
C	Inside width of cab (between windows)	940	3-1
D	Front track	1810	5-11
E	Wheelbase	2750	9-0
F	Overall length to front tyres (without hitch)	4030	13-3
	Overall length to front tyres (with hitch)	4229	13-10
G	Overall length to front of carriage	4550	14-11
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1381	4-6
M		1067	3-6
		1200	3-11
R1	1067mm forks	4486	14-9
R2	1200mm forks	4619	15-2
R3		3605	11-10
R4		965	3-2
S		1226	4-0
T		103	0-4
U1	1067mm forks	3521	11-7
U2	1200mm forks	3654	12-0
V	1067mm forks	7217	23-8

Weight (unladen): Refer to ***Axle Weight Distribution***.

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536-70

P5-5008

Note: *Dimensions relative to 15.5/80-24 tyres.*

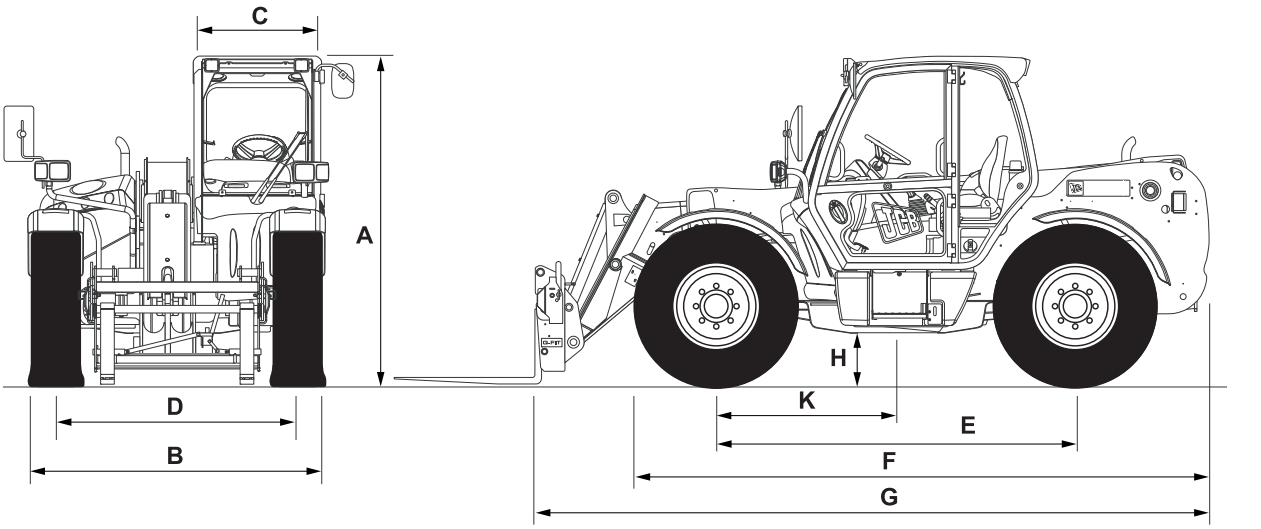


Fig 380.

Table 62.

		536-70	
		mm	**ft-in**
A	Overall height	2490	8-2
B	Overall width (over tyres)	2230	7-4
C	Inside width of cab (between windows)	940	3-1
D	Front track	1810	5-11
E	Wheelbase	2750	9-0
F	Overall length to front tyres	4380	14-4
G	Overall length to front of carriage	4990	16-4
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1420	4-8
	Outside turn radius (over tyres)	3700	12-2

Weight (unladen): Refer to ***Axle Weight Distribution***.

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535-125 HiViz, 535-140 HiViz

Note: *Dimensions relative to 15.5/80-24 tyres.*

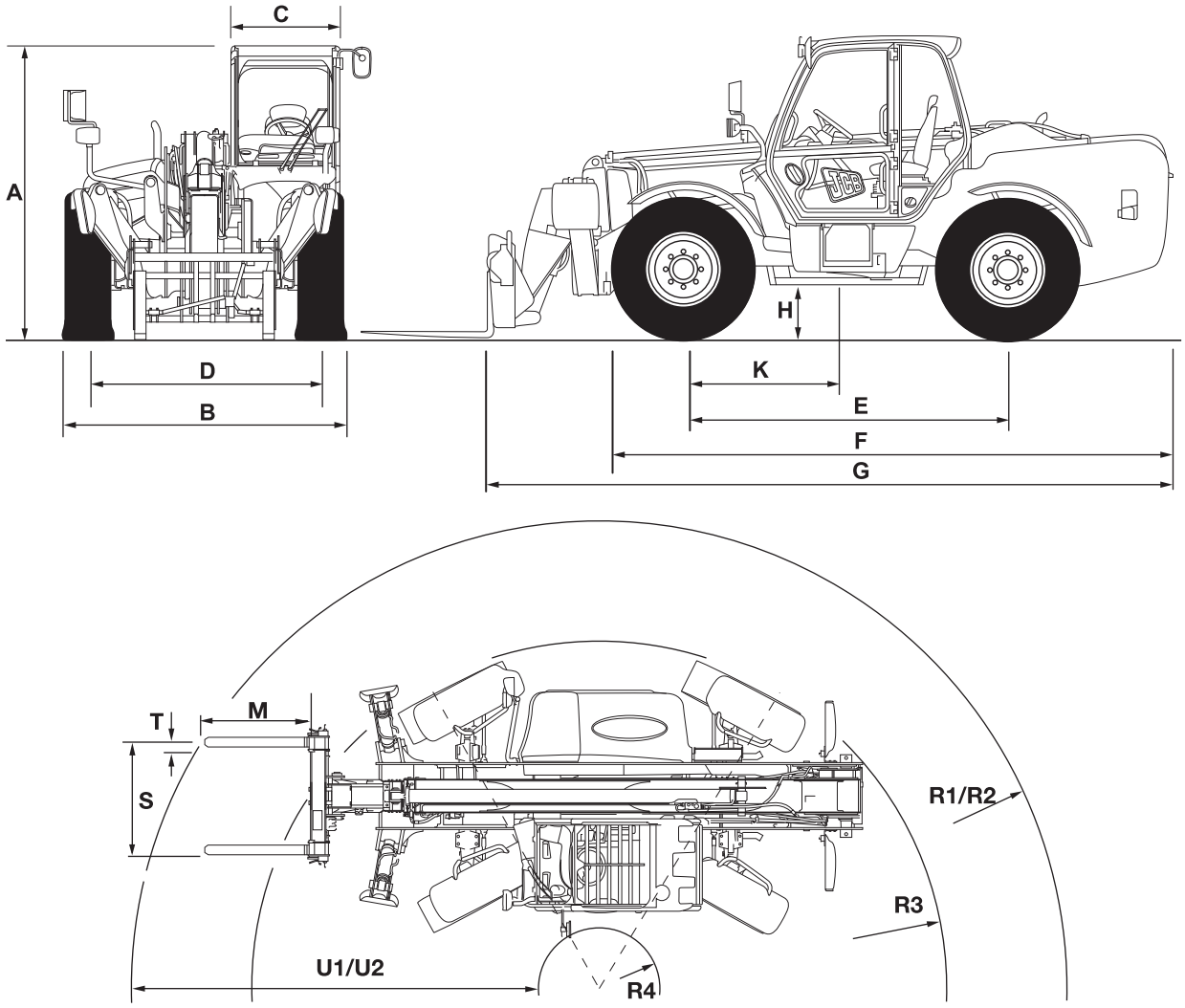


Fig 381.

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Table 63.

		535-125 HiViz		535-140 HiViz, 540-140 HiViz	
		mm	ft-in	mm	ft-in
A	Overall height	2590	8-6	2590	8-6
B	Overall width (over tyres)	2350	7-9	2350	7-9
C	Inside width of cab (between windows)	940	3-1	940	3-1
D	Front track	1900	6-3	1900	6-3
E	Wheelbase	2750	9-0	2750	9-0
F	Overall length to front tyres	4740	15-7	4740	15-7
G	Overall length to front of carriage	5800	19-0	6230	20-5
H	Ground clearance	400	1-4	400	1-4
K	Centre of gravity (unladen)	1400	4-7	1511	4-11
M		1067	3-6	1067	3-6
		1200	3-11	1200	3-11
R1	1067mm forks	4940	16-2	5300	17-5
R2	1200mm forks	5050	16-7	5420	17-9
R3		3750	12-4	3750	12-4
R4		930	3-1	930	3-1
S		1226	4-0	1226	4-0
T		103	0-4	103	0-4
U1	1067mm forks	4010	13-2	4370	14-4
U2	1200mm forks	4120	13-6	4490	14-9

Weight (unladen): Refer to ***Axle Weight Distribution***.

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540-140

P5-5011

Note: *Dimensions relative to 15.5/25 tyres.*

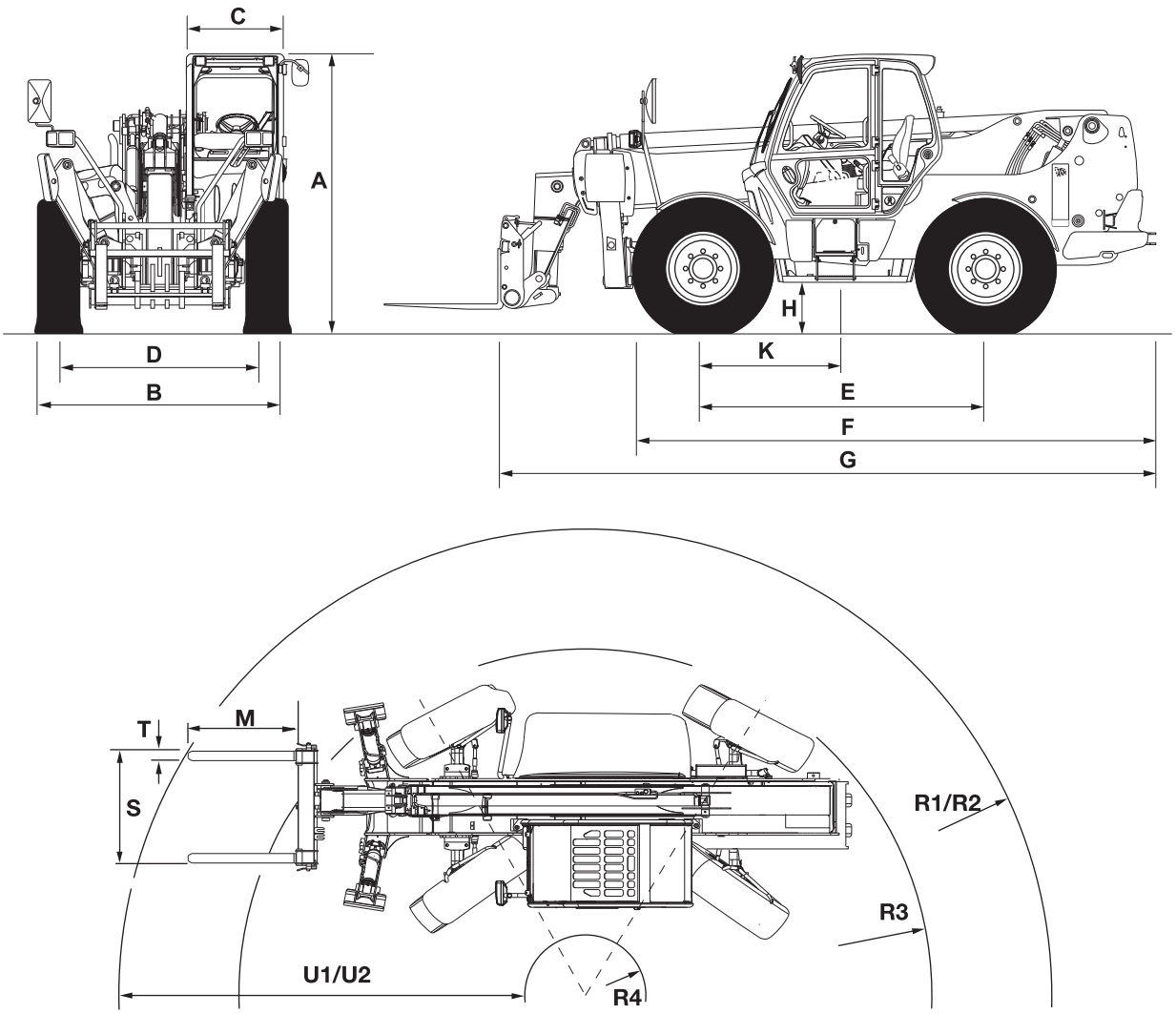


Fig 382.

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Table 64.

		540-140	
		mm	**ft-in**
A	Overall height	2590	8-6
B	Overall width (over tyres)	2350	7-9
C	Inside width of cab (between windows)	940	3-1
D	Front track	1900	6-3
E	Wheelbase	2900	9-6
F	Overall length to front tyres	5180	17-0
G	Overall length to front of carriage	6250	20-6
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1650	5-5
M		1067	3-6
		1200	3-11
R1	1067mm forks	5430	17-10
R2	1200mm forks	5530	18-2
R3		4100	13-5
R4		1340	4-5
S		1226	4-0
T		103	0-4
U1	1067mm forks	4100	13-5
U2	1200mm forks	4190	113-9

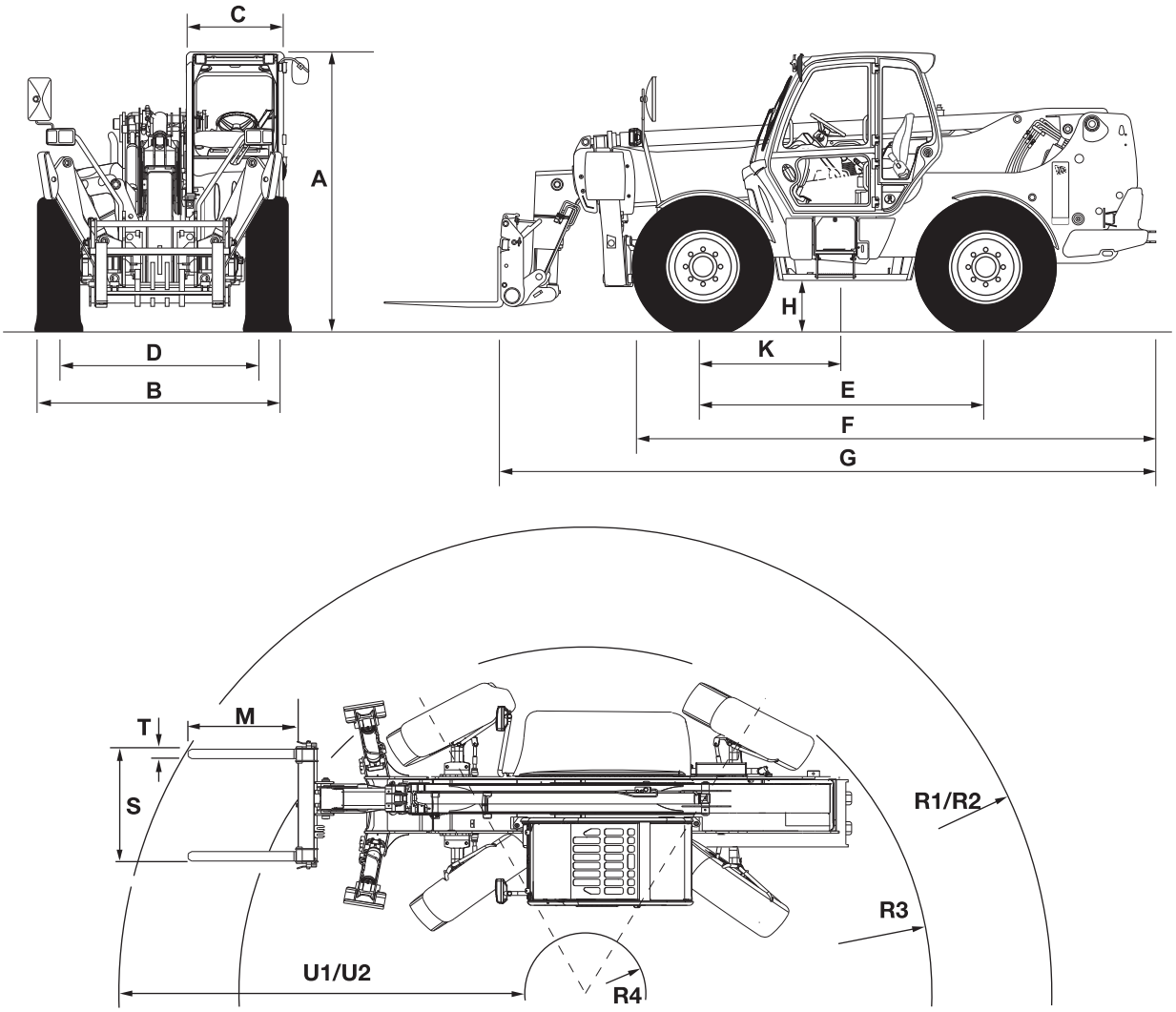
Weight (unladen): Refer to ***Axle Weight Distribution***.

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540-170

P5-5012

Note: *Dimensions relative to 15.5/80-24 tyres.*



420862-2

Fig 383.

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Table 65.

		540-170	
		mm	**ft-in**
A	Overall height	2690	8-10
B	Overall width (over tyres)	2440	8-0
C	Inside width of cab (between windows)	940	3-1
D	Front track	1900	6-3
E	Wheelbase	2750	9-0
F	Overall length to front tyres	5080	16-8
G	Overall length to front of carriage	6360	20-10
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1600	5-3
M		1067	3-6
		1200	3-11
R1	1067mm forks		
R2	1200mm forks		
R3			
R4			
S		1226	4-0
T		103	0-4
U1	1067mm forks	4100	13-5
U2	1200mm forks		

Weight (unladen): Refer to *Axle Weight Distribution*.

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540-200

Note: *Dimensions relative to 440/80-24 tyres.*

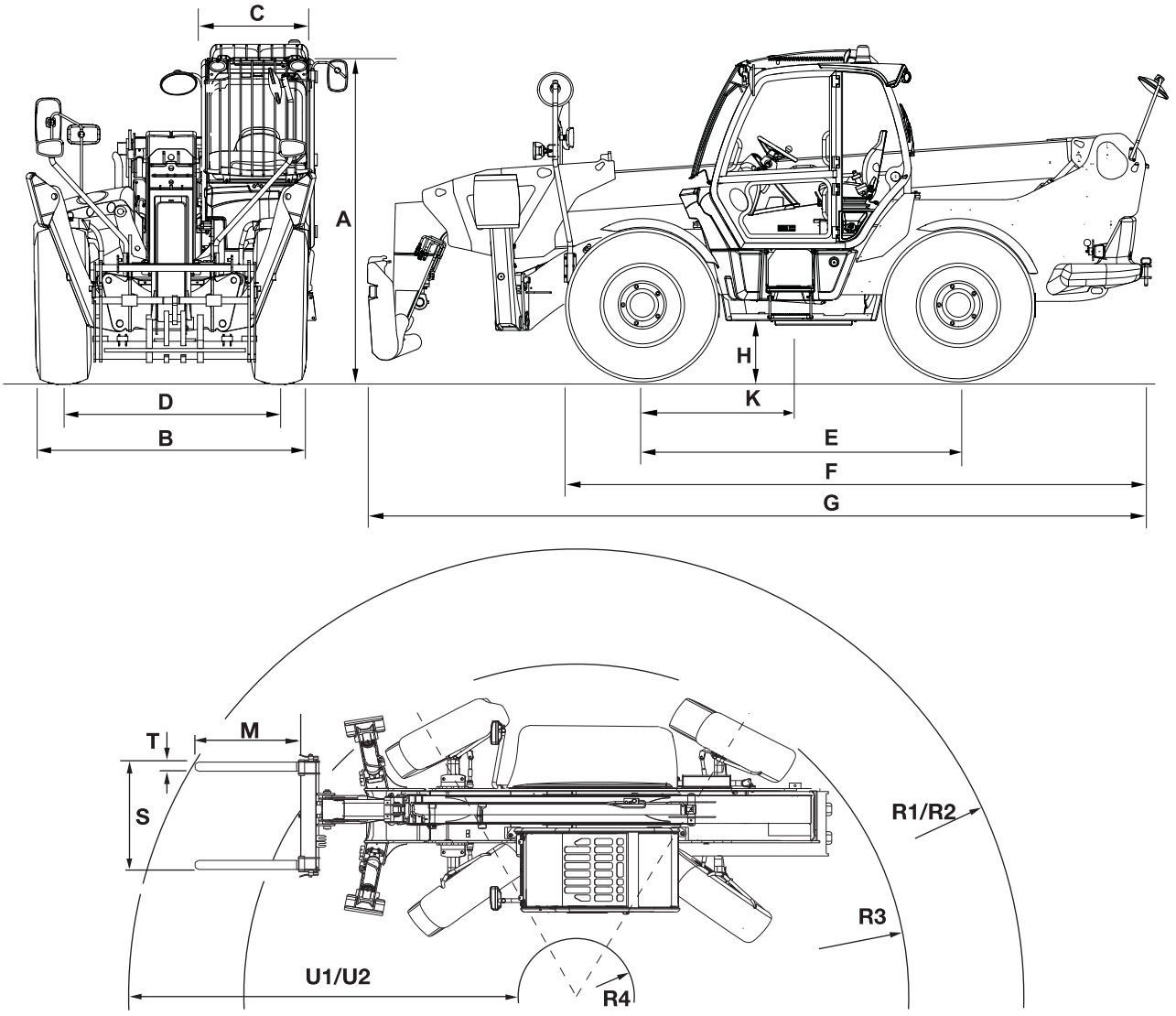


Fig 384.

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Table 66.

		540-200	
		mm	**ft-in**
A	Overall height	2690	8-10
B	Overall width (over tyres)	2456	8-1
C	Inside width of cab (between windows)	940	3-1
D	Front track	1996	6-7
E	Wheelbase	2750	9-0
F	Overall length to front tyres	5080	16-8
G	Overall length to front of carriage	6880	22-7
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)	1500	4-11
M		1067	3-6
		1200	3-11
R1	1067mm forks	5892	19-4
R2	1200mm forks	6003	19-8
R3		4115	13-6
R4		1760	5-9
S		1226	4-0
T		103	0-4
U1	1067mm forks	4132	13-7
U2	1200mm forks	4243	13-11

Weight (unladen): Refer to *Axle Weight Distribution*.

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550/560-80

Note: *Dimensions relative to 440/80R24 tyres.*

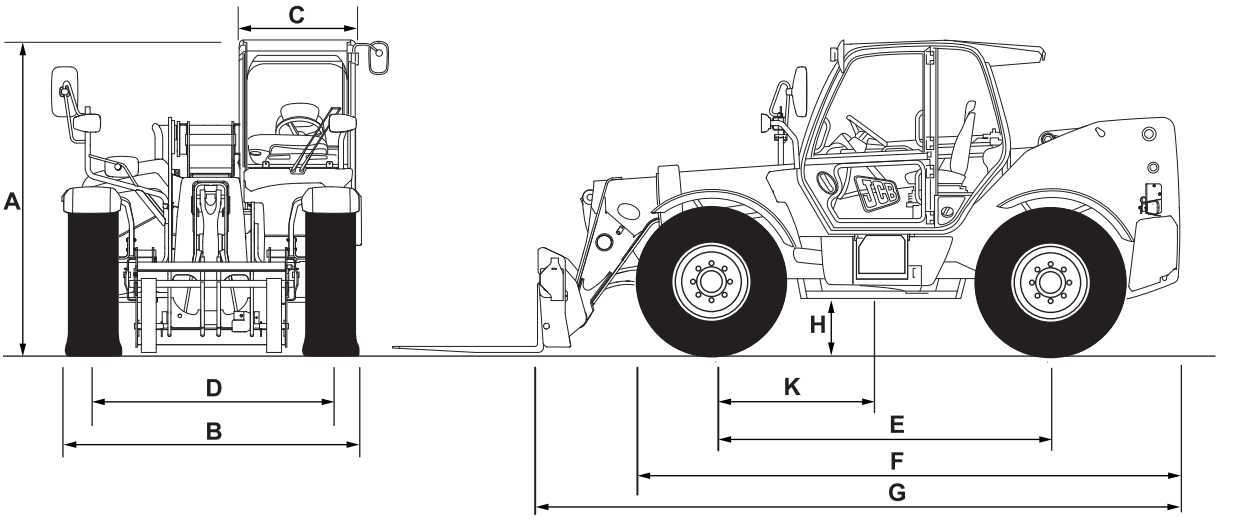


Fig 385.

Table 67.

		550/560-80	
		mm	**ft-in**
A	Overall height	2590	8-6
B	Overall width (over tyres)	2420	7-11
C	Inside width of cab (between windows)	940	3-1
D	Front track	1980	6-6
E	Wheelbase	2750	9-0
F	Overall length to front tyres	4420	14-6
G	Overall length to front of carriage	5273	17-3
H	Ground clearance	400	1-4
K	Centre of gravity (unladen)		
	Outside turn radius (over tyres)		

Weight (unladen): Refer to ***Axle Weight Distribution***.

B Overall width (over tyres)

XMINE D2 17.5 R25	2472 mm	8-1 ft-in
BIBLOAD HARD SURFACE 480/80 R26	2477 mm	8-1 ft-in
XMCL 480/80 R26	2485 mm	8-2 ft-in
XMCL 500/70 R24	2546 mm	8-4 ft-in
SE TRACTION 1300-24	2445 mm	8-0 ft-in

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Performance Dimensions

Lift Performance

Table 68. Machines Without Stabilisers

	531-70		535-95		536-60		536-70		541-70		550-80 Fixed		550-80 Sway		560-80	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Maximum lift capacity	3100	6832	3500	7716	3600	7934	3600	7934	4100	9036	4990	11000	4990	11000	6000	13227
Lift capacity to full height	2400	5291	3500	7716	3500	7716	2500	5510	2500	5510	2000	4409	4000	8818	3000	6614
Lift capacity at full reach	1250	2756	550	1213	1500	3307	1500	3307	1500	3307	1500	3307	1500	3307	1750	3858

	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Maximum lift height	7000	23-0	9500	31-2	6200	20-4	7000	23-0	7000	23-0	8100	26-7	8100	26-7	7900	25-11
Reach at maximum lift height	480	1-7	2430	7-11	870	2-10	480	1-7	480	1-7	920	3-0	920	3-0	1221	4-0
Maximum forward reach	3700	12-2	6520	21-5	3300	10-10	3700	12-2	3700	12-2	4470	14-8	4470	14-8	4466	14-8
Reach with 1 tonne load	3700	12-2	5080	16-8	3300	10-10	3700	12-2	3700	12-2	4470	14-8	4470	14-8	4466	14-8
Placing height	6300	20-8	8780	28-9	5420	17-10	6300	20-8	6300	20-8	7450	24-5	7450	24-5	7250	23-9

Note: *Complies with stability test EN 1459 Annex B.*

Note: *Dimensions are with stabilisers fully extended.*

Table 69. Machines With Stabilisers

	533-105		535-125 HiViz		535-140 HiViz		540-140 HiViz		540-140		540-170		540-200	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Maximum lift capacity	3300	7277	3500	7716	3500	7716	4000	8818	4000	8818	4000	8820	4000	8820
Lift capacity to full height	3300	7277	3500	7716	3000	6614	3000	6614	4000	8818	2500	5510	1500	3307
Lift capacity at full reach	1050	2315	1150	2535	1250	2756	1250	2756	1250	2756	600	1320	200	441

	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in	mm	ft-in
Maximum lift height	10220	33-6	12280	40-3	13780	45-2	13780	45-2	13800	45-3	16700	54-9	20000	65-7
Reach at maximum lift height	1910	6-3	460	1-6	930	3-0	930	3-0	740	2-5	2050	6-9	2810	9-3
Maximum forward reach	6830	22-5	8060	26-5	9600	31-6	9600	31-6	9250	30-4	12500	41-0	15900	52-2
Reach with 1 tonne load	6830	22-5	8060	26-5	9600	31-6	9600	31-6	9250	30-4	10500	34-5	11600	38-1
Placing height	9820	32-3	11750	38-7	13300	43-8	13300	43-8	13250	43-6	16200	53-2	18600	61-0

Maximum Wading Depth

P5-5003

The maximum wading depth of these machines is 400mm (16in). Water can enter the engine and axles and the cooling fan can be damaged if the machine is operated in deeper water.

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Axle Weight Distribution

Machines Without Stabilisers

Table 70.

Machine	Wheel Load kg (lbs)				Total Axle Load kg (lbs)		Total Machine Weight kg (lbs)	Maximum Lift Capacity kg (lbs)	Axle Load at Maximum Lift Capacity kg (lbs)		
	Rear LH	Rear RH	Front LH	Front RH	Front	Rear			Front	Rear	Total
531-70	1820 (4011)	1870 (4122)	1630 (3593)	1740 (3835)	3370 (7428)	3690 (8133)	7060 (15560)	3100 (6832)	tbc	tbc	tbc
531-70 Agri Plus	1990 (4386)	2050 (4518)	1690 (3725)	1750 (3857)	3440 (7582)	4040 (8904)	7480 (16486)	3100 (6832)	tbc	tbc	tbc
531-70 Agri Super	2010 (4430)	2070 (4562)	1730 (3813)	1830 (4033)	3560 (7846)	4080 (8992)	7640 (16839)	3100 (6832)	tbc	tbc	tbc
535-95 Agri Super	2330 (5135)	2320 (5113)	1850 (4078)	1950 (4298)	3800 (8375)	4650 (10247)	8450 (18624)	3500 (7716)	9456 (20841)	2044 (4505)	11500 (25346)
536-60 Agri Super	1870 (4122)	1910 (4210)	1760 (3879)	1900 (4187)	3660 (8067)	3780 (8331)	7440 (16398)	3600 (7934)	tbc	tbc	tbc
541-70 Agri Super	2150 (4739)	2210 (4871)	1810 (3989)	1900 (4188)	3710 (8177)	4360 (9610)	8070 (17786)	4000 (8818)	tbc	tbc	tbc
550-80 Sway	2829 (6237)	2829 (6237)	2349 (5179)	2449 (5399)	4798 (10578)	5658 (12474)	10456 (23052)	4990 (11001)	13775 (30369)	1671 (3684)	15446 (34053)
560-80	-	-	-	-	4845 (10681)	6329 (13953)	11174 (24634)	6000 (13228)	15210 (33532)	1839 (4054)	17049 (37587)

Note: *The figures stated above are measured with the boom horizontal and in the retracted position with the forks horizontal and no operator.*

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Machines With Stabilisers

Table 71.

Machine	Wheel Load kg (lbs)				Total Axle Load kg (lbs)		Total Machine Weight kg (lbs)	Maximum Lift Capacity kg (lbs)	Axle Load at Maximum Lift Capacity kg (lbs)		
	Rear LH	Rear RH	Front LH	Front RH	Front	Rear			Front	Rear	Total
533-105	2110 (4650)	2140 (4717)	2250 (4959)	2350 (5180)	4600 (10139)	4250 (9367)	8850 (19506)	3300 (7277)	10430 (22988)	1520 (3350)	11950 (26338)
535-125 HiViz (Sway)	2460 (5423)	2490 (5490)	2450 (5401)	2320 (5115)	4770 (10516)	4950 (10913)	9720 (21429)	3500 (7716)	11080 (24427)	2140 (4718)	13220 (29145)
535-140 HiViz	2940 (6482)	3040 (6702)	2540 (5600)	2360 (5203)	4900 (10803)	5980 (13184)	10880 (23986)	3500 (7716)	11787 (25986)	2593 (5717)	14380 (31702)
540-140 HiViz	2940 (6482)	3040 (6702)	2540 (5600)	2360 (5203)	4900 (10803)	5980 (13184)	10880 (23986)	4000 (8818)	12700 (27999)	2070 (4564)	14770 (32562)
540-140	2950 (6502)	3000 (6612)	2530 (5576)	2610 (5753)	5140 (11329)	5950 (13114)	11090 (24443)	4000 (8818)	12132 (26739)	2726 (6008)	14858 (32747)
540-170	3350 (7385)	3360 (7407)	2730 (6018)	2620 (5776)	5350 (11974)	6710 (14792)	12060 (26586)	4000 (8818)	12812 (28244)	3248 (7160)	16060 (35404)
540-200	3400 (7496)	3430 (7562)	2890 (6371)	2820 (6217)	5710 (12588)	6830 (15058)	12540 (27646)	4000 (8818)	14277 (31475)	2263 (4989)	16540 (36464)

Note: *The figures stated above are measured with the boom horizontal and in the retracted position with the forks horizontal and no operator.*

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Noise Data

Introduction

T5-008_2

To assist in compliance with European Directives 2000/14/EC and 2005/88/EC, the noise data values for this type of machine have been provided on the following page(s) and may be used for the assessment of risks to exposure from noise.

The noise data values shown only apply to CE marked machines.

For information relating to this machine when used with other JCB approved attachments, please refer to the literature accompanying the attachments.

Definition of terms:

LpA A-weighted sound pressure level measured at the operator's station.(1)

LwA Equivalent A-weighted sound power level emitted by the machine.(2)

(1) Determined in accordance with the test method defined in ISO 6396 and the dynamic test conditions defined on 2000/14/EC.

(2) Guaranteed equivalent sound power (external noise) determined in accordance with the dynamic test conditions defined in 2000/14/EC.

531-70, 533-105, 535-95, 536-60, 536-70, 541-70

Table 72.

Engine	LpA	LwA
Turbocharged 63kW (85Hp)		104
Turbocharged 74.2kW (100Hp)		105
Turbocharged and After-Cooled 97kW (130Hp)	79	107

535-125 HiViz, 535-140 HiViz, 540-140 HiViz

Table 73.

Engine	LpA	LwA
Turbocharged 63kW (85Hp)		105
Turbocharged 74.2kW (100Hp)		106

540-140, 540-170, 540-200

Table 74.

Engine	LpA	LwA
Turbocharged 74.2kW (100Hp)		106
Turbocharged 85kW (114Hp)		106
Turbocharged and After-Cooled 97kW (130Hp)		107

550/560-80

Table 75.

Engine	LpA	LwA
Turbocharged and After-Cooled 97kW (130Hp)	76	107
Turbocharged and After-Cooled 108kW (145Hp)	76	107

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Vibration Data

Introduction

T5-001

To assist in compliance with European Directive 2002/44/EC, duty specific vibration emission values for this machine type have been provided on the following page(s) and may be used for the assessment of risks to exposure from vibration.

Unless otherwise indicated for a specific operating condition, vibration values are determined with the machine equipped with standard attachments (i.e. bucket, shovel, fork, etc.) for the respective operating condition.

Vibration values are determined from measurements in three perpendicular axes (**X**, **Y** and **Z**). ⇨ *Fig 386. (389)*. The highest weighted (rms) value is used to specify the vibration emission.

Note: *The axis upon which the highest weighted (rms) value occurs is stated on the vibration chart for each of the Machine Operating Duties, see* ***Dominant Axis (X, Y or Z)****.*

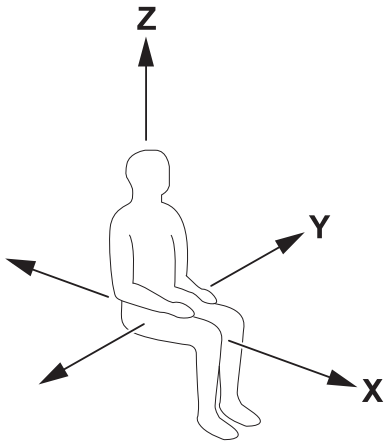


Fig 386.

Minimising Exposure to Vibration

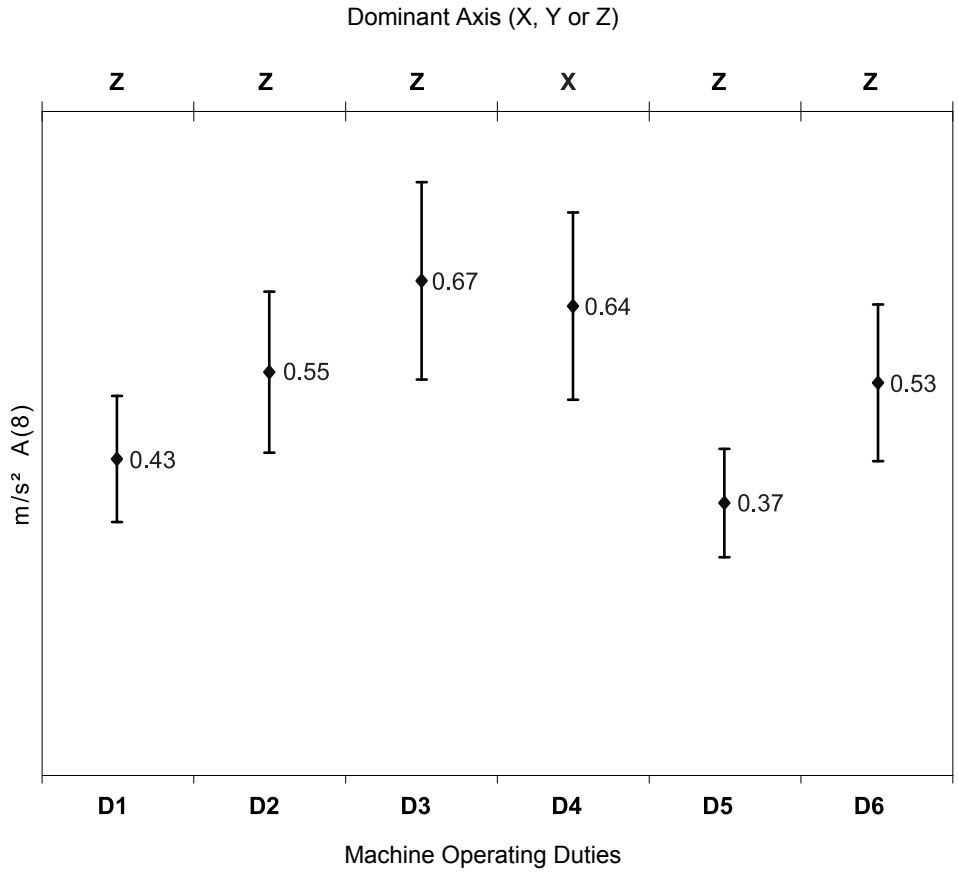
Exposure to vibration can be minimised through:

- Selection of the correct size and capacity of machine, equipment and attachments for a particular application.
- Use of a machine equipped with an appropriate seat, keeping the seat maintained and adjusted.
- Checks to ensure that the machine is properly maintained, reporting and correcting any faults.
- Steering, braking, accelerating, shifting gears, moving the attachments and load smoothly.
- Adjusting the machine speed and travel path to minimize the vibration level.
- Keeping the terrain on worksites where the machine is working and travelling in good condition, removing any large rocks or obstacles and filling in any ditches and holes.
- Choosing routes that avoid rough surfaces and, if this is not possible, drive more slowly to avoid bumping and jolting.
- Travelling over longer distances at an adjusted (medium) speed.
- Avoiding bad postures, i.e. slumping in your seat, constantly leaning forward or sideways or driving with your back twisted.

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531-70, 533-105, 535-95, 536-60, 536-70, 541-70

Table 76. Whole-Body Vibration Emission Under Representative Operating Conditions (According to the Intended Use)



Whole-body vibration emission determined in accordance with ISO 2631-1:1997 for this machine type is 0.60 m/s² normalised to an 8-hour reference period [A(8)] and based upon a test cycle comprising of "Pick and place" and "Loader work (Soil)".

Hand-arm vibration determined in accordance with dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

Note: *Errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).*

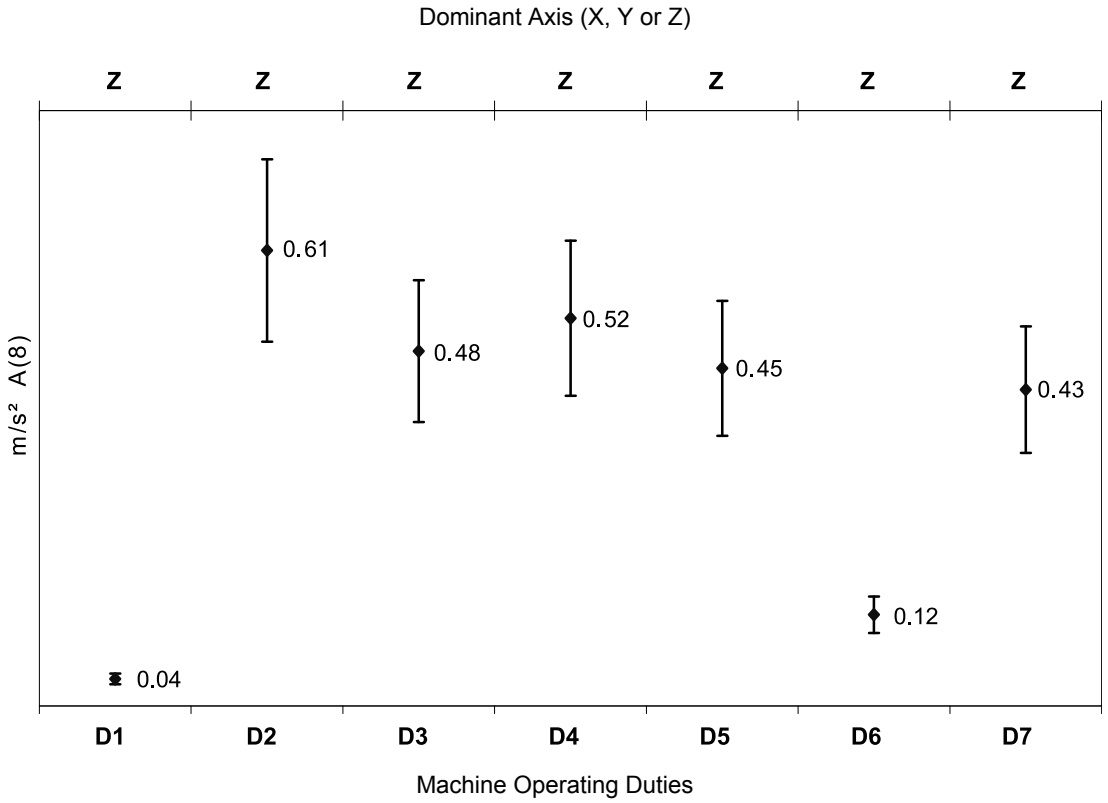
Machine Operating Duties

D1	Roading (tarmac)
D2	Roading (rough terrain)
D3	Loader work (soil)
D4	Loader work (stone)
D5	Lift cycles
D6	Pick and place cycles

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540-140

Table 77. Whole-Body Vibration Emission Under Representative Operating Conditions (According to the Intended Use)



Whole-body vibration emission determined in accordance with ISO 2631-1:1997 for this machine type is 0.48 m/s² normalised to an 8-hour reference period [A(8)] and based upon a test cycle comprising of "Pick and place" and "Loader work (Soil)".

Hand-arm vibration determined in accordance with dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

Note: *Errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).*

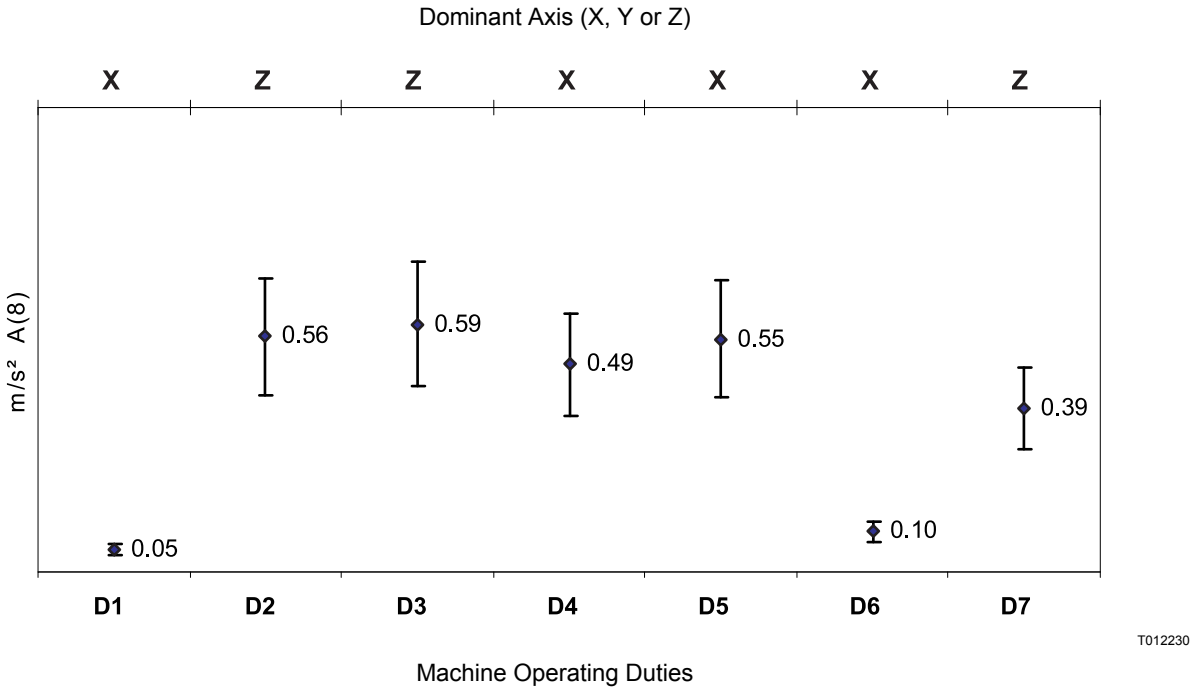
Machine Operating Duties

D1	Low Idle
D2	Roading (tarmac)
D3	Roading (rough terrain)
D4	Loader work (soil)
D5	Loader work (stone)
D6	Lift cycles
D7	Pick and place cycles

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535-125 HiViz, 535-140 HiViz, 540-140 HiViz

Table 78. Whole-Body Vibration Emission Under Representative Operating Conditions (According to the Intended Use)



Whole-body vibration emission determined in accordance with ISO 2631-1:1997 for this machine type is 0.49 m/s² normalised to an 8-hour reference period [A(8)] and based upon a test cycle comprising of "Pick and place" and "Loader work (Soil)".

Hand-arm vibration determined in accordance with dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

Note: *Errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).*

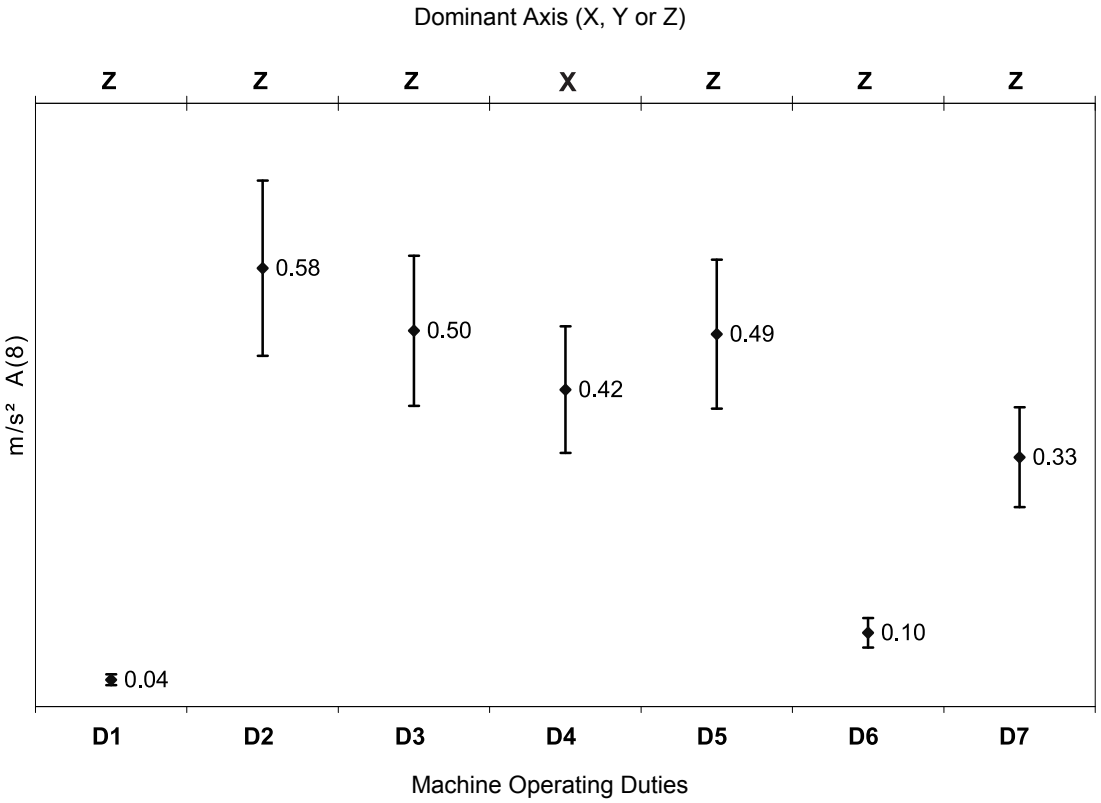
Machine Operating Duties

D1	Low Idle
D2	Roading (tarmac)
D3	Roading (rough terrain)
D4	Loader work (soil)
D5	Loader work (stone)
D6	Lift cycles
D7	Pick and place cycles

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540-170, 540-200

Table 79. Whole-Body Vibration Emission Under Representative Operating Conditions (According to the Intended Use)



Whole-body vibration emission determined in accordance with ISO 2631-1:1997 for this machine type is 0.38 m/s² normalised to an 8-hour reference period [A(8)] and based upon a test cycle comprising of "Pick and place" and "Loader work (Soil)".

Hand-arm vibration determined in accordance with dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

Note: *Errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).*

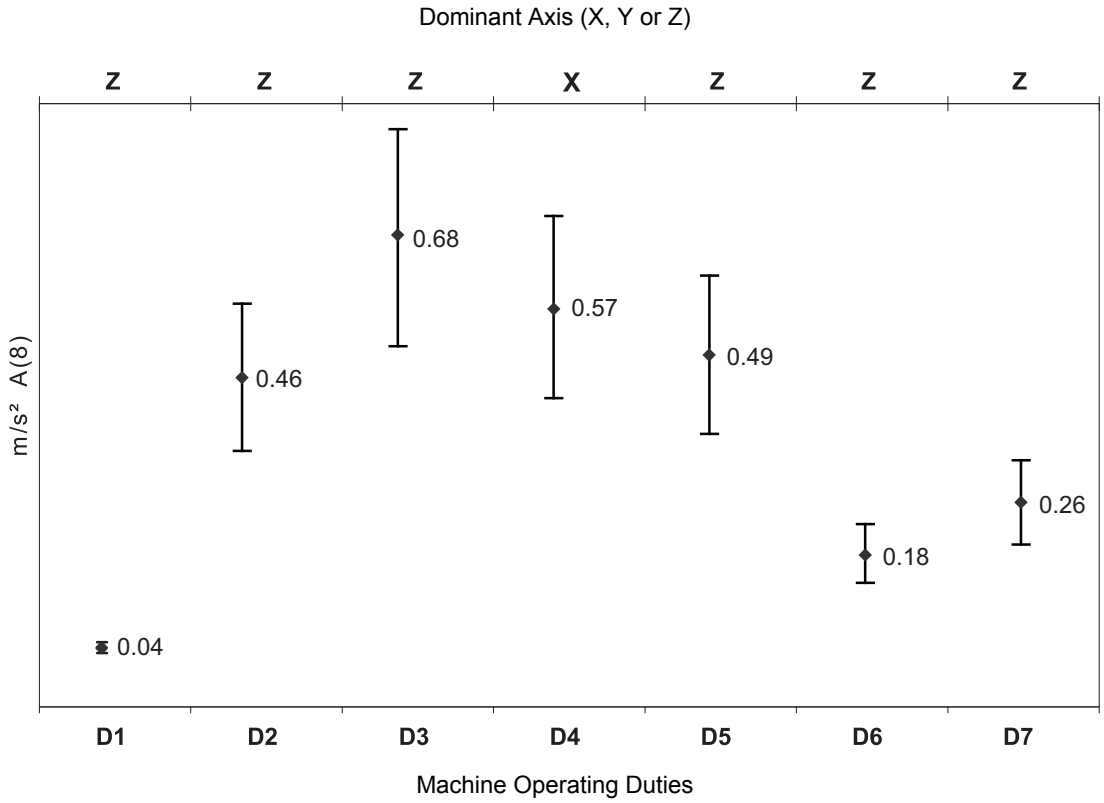
Machine Operating Duties

D1	Low Idle
D2	Roading (tarmac)
D3	Roading (rough terrain)
D4	Loader work (soil)
D5	Loader work (stone)
D6	Lift cycles
D7	Pick and place cycles

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550/560-80

Table 80. Whole-Body Vibration Emission Under Representative Operating Conditions (According to the Intended Use)



Whole-body vibration emission determined in accordance with ISO 2631-1:1997 for this machine type is 0.42 m/s² normalised to an 8-hour reference period [A(8)] and based upon a test cycle comprising of "Pick and place" and "Loader work (Soil)".

Hand-arm vibration determined in accordance with dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

Note: *Errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).*

Machine Operating Duties

D1	Low Idle
D2	Roading (tarmac)
D3	Roading (rough terrain)
D4	Loader work (soil)
D5	Loader work (stone)
D6	Lift cycles
D7	Pick and place cycles

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Tyre Sizes and Pressures

Introduction

P5-5001_3

Before you operate the machine, make sure that the correct tyres are installed and they are inflated to the correct pressure.

Refer to the chart in the machine for the correct tyre and pressure. Do not use the maximum pressure which is marked on the tyre.

Important: *The pressures shown on the chart are agreed with the tyre manufacturer/s according to the European Tyre and Rim Technical Organisation (ETRTO) standards to satisfy machine stability performance.*

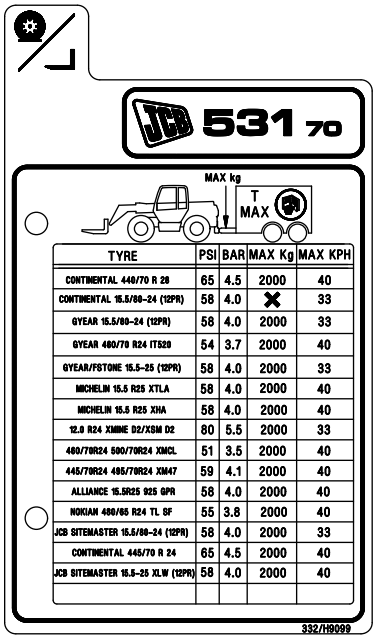
If the chart does not show the tyres installed on your machine, then you must speak to your JCB Distributor for instruction. Do not guess the tyre pressures.

Non-approved tyre ballast can cause damage to the machine's drive train and structures. It will also affect manufacturer's warranty. For advice consult your JCB Distributor.

Specifications

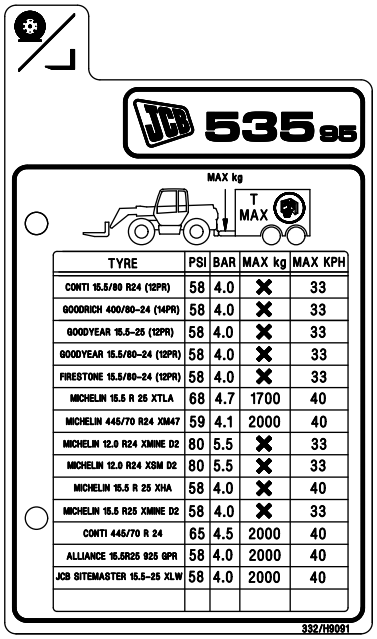
Important: *Michelin XMine D2 tyres are limited to a maximum travel distance of 6 km (3.7 miles) in any one hour period. Speeds above 6 kph (3.7 mph) are permitted in short bursts provided the maximum distance travelled in one hour does not exceed 6 kph (3.7 mph).*

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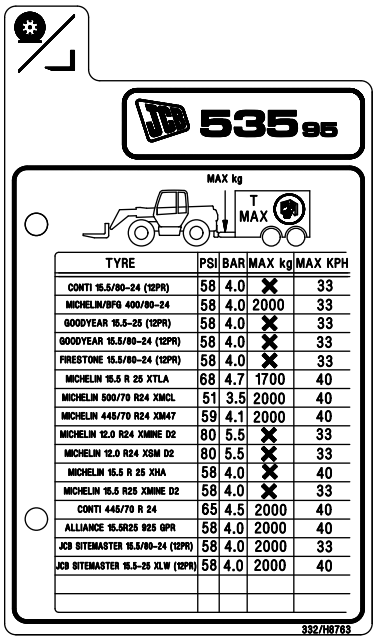
332H9099

Fig 387.



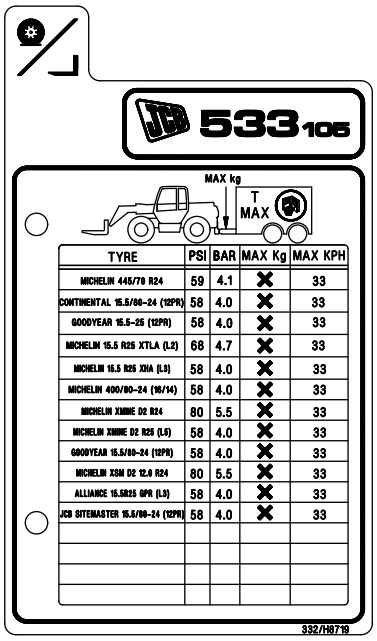
332-h9091-1-sheet1

Fig 389. Sway Machines



332-h8763-1-sheet1

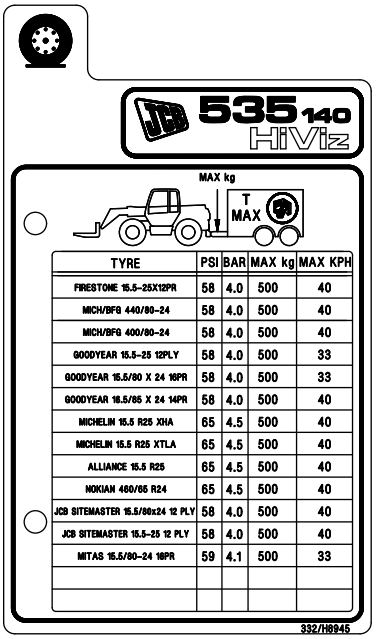
Fig 388. Non Sway Machines



332-h8719-1-sheet1

Fig 390.

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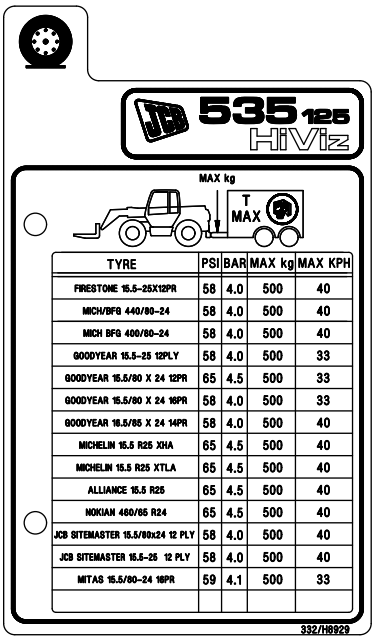
332H8945

Fig 391.



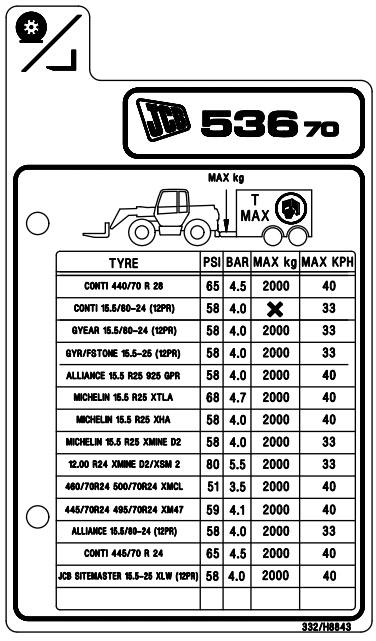
332H9795

Fig 393.



332H8929

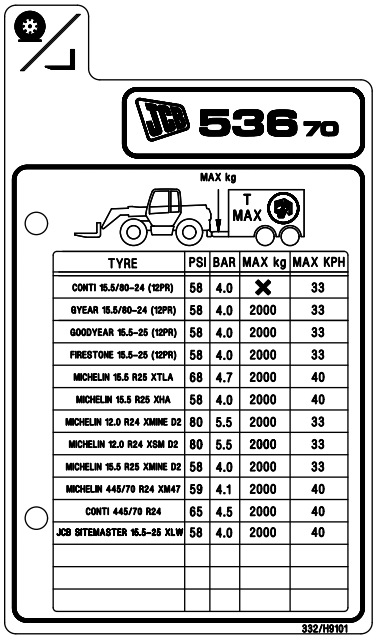
Fig 392.



332H8843

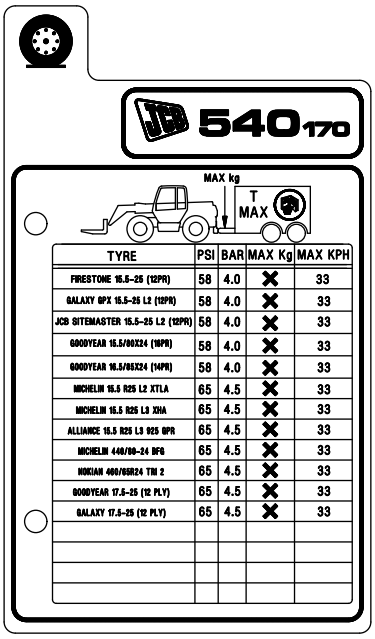
Fig 394. Non Sway Machines

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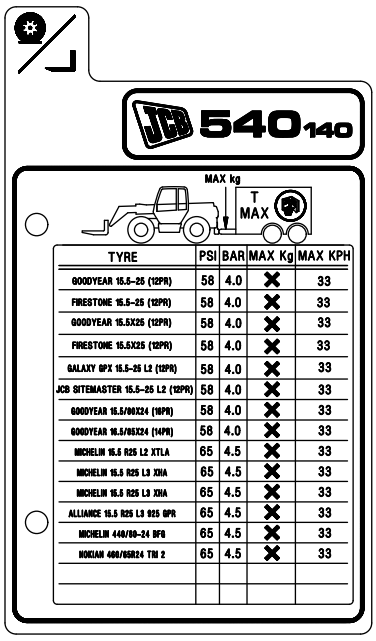
332H9101

Fig 395. Sway Machines



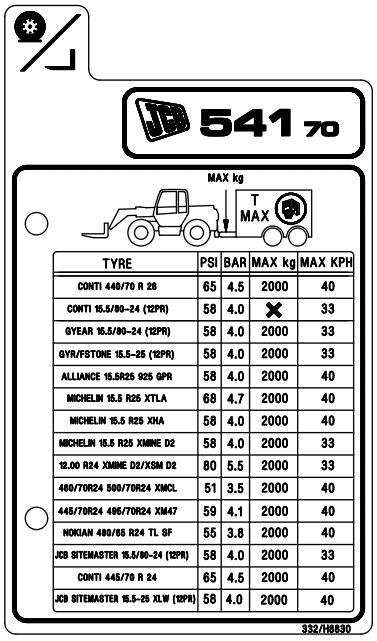
332H9061

Fig 397.



332H8969

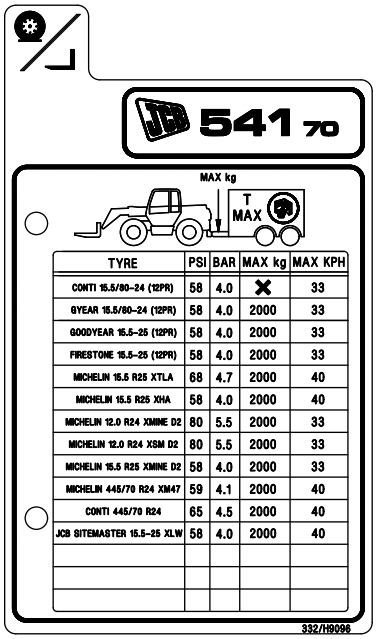
Fig 396.



332H8830

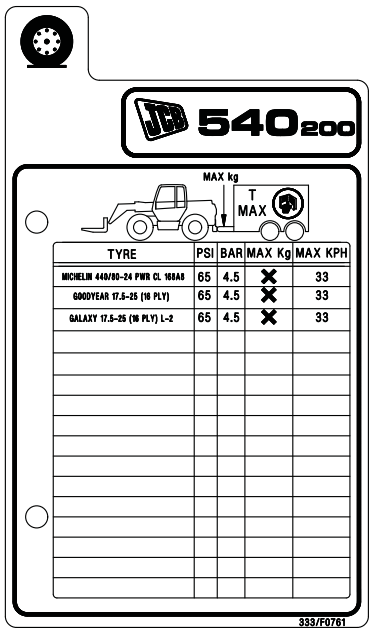
Fig 398. Non Sway Machines

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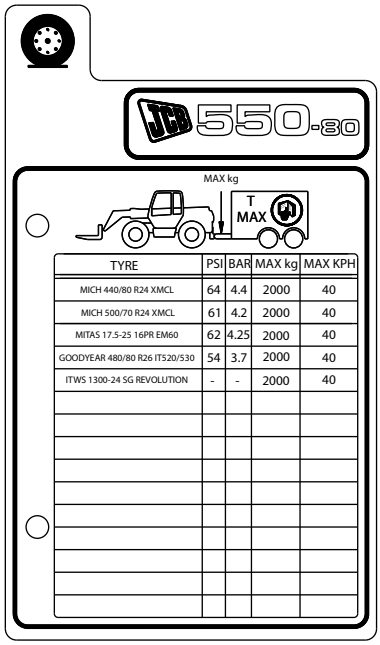
332H9096

Fig 399. Sway Machines



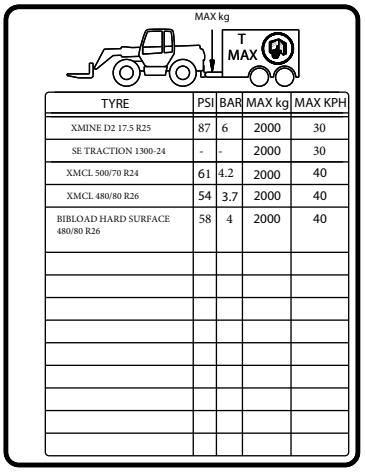
T067570

Fig 401.



C112810

Fig 400. 550-80



C112810

Fig 400. 560-80

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Trailer Towing

Towing Limitations

⚠ WARNING

Do not exceed the permitted limits on trailer gross weight or hitch load. The machine may become unstable.

0068

Maximum Gross Trailer Weight

The maximum gross trailer weight permitted to be towed by your machine (when fitted with JCB approved towing equipment) is shown.

Important: *The maximum gross trailer weight is restricted by the type of braking system fitted. Refer to* ***Trailer Braking Systems****.*

Table 81. Maximum Gross Trailer Weight (T MAX)

Model	kg (lbs)
European Tractor Type Approved Builds(1)	-
Mechanical tow hitch (HiViz Models)	3500 (7715)
Hydraulic tow hitch (550-80 Models)	7600 (16755)
Hydraulic tow hitch (All other models)	10000 (22046)
Recovery hitch (Rear)(2)	1000 (2204)
Hydraulic tow hitch (560-80 Models)	7350 (16203)

(1) The maximum gross trailer weight is indicated on the machine identification plate. Refer to Machine Identification Plate (Introduction Section).

(2) The recovery hitch is only suitable for occasional off-highway towing. It is not approved as a permanent tow hitch.

Tyre Pressures and Hitch Loads

T5-012

The correct tyre pressures and maximum speeds relative to trailer hitch loads ***MAX KG*** are shown on a tyre chart (found in the cab). Refer to ***Tyre Sizes and Pressures***.

Make sure that the tyre pressures are correct and do not exceed the speed or loads shown against the size of tyres fitted.

Trailer Braking Systems

P5-5015

The maximum gross trailer weight is restricted by the type of braking system fitted.

Up to 750kg (1650lbs) gross trailer weight, trailer brakes are not essential.

Above 750kg (1650lbs) and not exceeding 3500kg (7715lbs) tonnes gross trailer weight, over-run brakes must be fitted to the trailer. Inertia brakes are those that are automatically operated if the trailer exerts a force on the towbar of the towing vehicle.

Above 3500kg (7715lbs) and not exceeding 6000kg (13225lbs) gross trailer weight, independent brakes must be fitted. Independent brakes are those that are applied by the operator.

Above 6000kg (13225lbs) and not exceeding the maximum gross trailer weight permitted, close-coupled brakes must be fitted to the trailer. Close-coupled brakes are those that are operated when the foot brake pedal is depressed in the towing vehicle.

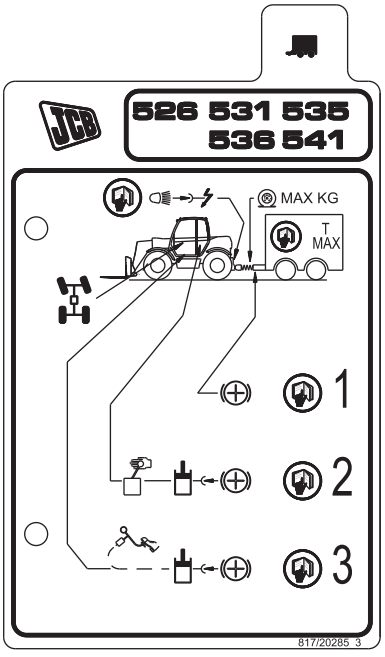
In all cases the towing Loadall must have 2-wheel steering engaged and trailer lighting must be operative.

The towing chart gives a visual summary of the requirements for towing with the machine. Always refer to the chart in your machine.

1 Over-run brakes

2 Independent brakes

3 Close-coupled brakes



817-20285-3

Fig 402. Towing Chart

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Warranty Information

Machine Service Record Sheet

T6-003

Installation Checklist Date:	

1st 100 Hrs./1 Month Date: Hour reading:	

500 Hrs./6 Month Date: Hour reading:	

1000 Hrs./12 Month Annual insurance Date: Hour reading:	

1500 Hrs./18 Month Date: Hour reading:	

2000 Hrs./24 Month Annual insurance Date: Hour reading:	

2500 Hrs./30 Month Date: Hour reading:	

3000 Hrs./36 Month Annual insurance Date: Hour reading:	

3500 Hrs./42 Month Date: Hour reading:	

4000 Hrs./48 Month Annual insurance Date: Hour reading:	

4500 Hrs./54 Month Date: Hour reading:	

5000 Hrs./60 Month Annual insurance Date: Hour reading:	

5500 Hrs./66 Month Date: Hour reading:	

6000 Hrs./72 Month Annual insurance Date: Hour reading:	

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6500 Hrs./78 Month Date: Hour reading:	

7000 Hrs./84 Month Annual insurance Date: Hour reading:	

7500 Hrs./90 Month Date: Hour reading:	

8000 Hrs./96 Month Annual insurance Date: Hour reading:	

8500 Hrs./102 Month Date: Hour reading:	

9000 Hrs./108 Month Annual insurance Date: Hour reading:	

9500 Hrs./114 Month Date: Hour reading:	

10000 Hrs./120 Month Annual insurance Date: Hour reading:	

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Registration Information

T6-001

Customer Copy

Dealer

JCB Model

P.I.N./Machine Serial Number

V.I.N.

Vehicle Registration Number

Engine Serial Number

Registration Date

Installing Engineer

Dealer Copy (U.K. and Eire only) - Do not send back to JCB Service. A copy of the registration details to be sent direct to:

The Equipment Register Ltd. (T.E.R.)
Bath and West Buildings
Lower Bristol Road
Bath, BA2 3EG
Tel: 01225 464599 (24 Hour)
Fax: 01225 317698

Customer Copy - Do not remove this portion from the Operator Manual.

Dealer Copy

Dealer

JCB Model

P.I.N./Machine Serial Number

V.I.N.

Vehicle Registration Number

Engine Serial Number

Registration Date

Installing Engineer

Customer's Name

Address

P.D.I. Date

Owner's Plant Reference No.

Alpha Dot Security System **Yes/No**

Please send details of: 'JCB Assetcare Machinery Protection Plan' **Yes/No**

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European Community Standards

EC Declaration of Conformity

Introduction

TS-006_3

A completed copy of the EC Declaration of Conformity is supplied with all machines manufactured according to EC type examination and/or self-certification requirements.

A sample copy of the EC Declaration of Conformity and a summary of the information that can appear is provided. Refer to ***Explanation of the EC Declaration of Conformity***.

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DECLARATION OF CONFORMITY

NAME AND ADDRESS OF MANUFACTURER:	A
HEREBY DECLARES THAT THE MACHINERY / EQUIPMENT DESCRIBED BELOW:	
DESIGNATION OF MACHINERY/EQUIPMENT:	P
DESCRIPTION OF MACHINERY / EQUIPMENT:	B
TRADE NAME:	JCB
MODEL NAME:	C
SERIAL NUMBER OF MACHINERY / EQUIPMENT	D

COMPLIES WITH THE PROVISIONS OF THE "MACHINERY DIRECTIVE" (DIRECTIVE 2006/42/EC AS AMENDED).

THE FOLLOWING STANDARDS HAVE BEEN USED:	E
NAME AND ADDRESS OF THE PERSON WHO COMPILES THE TECHNICAL DOCUMENTATION:	F

COMPLIES WITH THE PROVISIONS OF THE "ELECTRO-MAGNETIC COMPATIBILITY DIRECTIVE" (DIRECTIVE 2004/108/EC AS AMENDED).

COMPLIES WITH THE PROVISIONS OF THE "NOISE EMISSIONS IN THE ENVIRONMENT BY EQUIPMENT FOR USE OUTDOORS DIRECTIVE" (DIRECTIVE 2000/14/EC AS AMENDED).

NAME AND ADDRESS OF THE PERSON WHO KEEPS THE TECHNICAL DOCUMENTATION:	G
CONFORMITY ASSESSMENT PROCEDURE:	H
NAME AND ADDRESS OF NOTIFIED BODY:	J
MEASURED SOUND POWER LEVEL ON EQUIPMENT REPRESENTATIVE FOR THIS TYPE:	K
GUARANTEED SOUND POWER LEVEL FOR THIS EQUIPMENT:	
NET INSTALLED POWER / MASS OF APPLIANCE:	L

PLACE OF DECLARATION:	M
DATE OF DECLARATION:	XX/XX/XXXX
NAME OF AUTHORISED SIGNATORY:	
POSITION:	N
SIGNATURE:	XXXXXX

English 9814/0850 Issue 4

9814-0850-4-GB

Fig 403.

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Explanation of the EC Declaration of Conformity

A JCB Material Handling Limited
Lakeside Works
Rocester
Staffordshire
United Kingdom
ST14 5JP

B Lift Truck, Combustion-Engine Driven, Counterbalanced (Rough Terrain Trucks)

C Refer to ***Machine Model and Serial Number (Introduction Section)***.

D Refer to ***Typical Product Identification Number (PIN) (Introduction Section)***.

E EN 1459:1998

F Engineering Director
JCB Material Handling Limited
Lakeside Works
Rocester
Staffordshire
United Kingdom
ST14 5JP

G Mr C J Knowles
J. C. Bamford Excavators Limited
Lakeside Works
Rocester
Staffordshire
United Kingdom
ST14 5JP

H ANNEX VI PROCEDURE 1

J A. V. Technology
A. V. House
Birdhall Lane
Stockport
Cheshire
United Kingdom
SK3 0XU

K Refer to ***Noise Data (Specification Section)***.

L Refer to ***Noise Data (Specification Section)***.

M Rocester

N Managing Director

P Variable reach truck

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