



## Section 2

# Care & Safety

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World Class  
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## Section 0 - Service Manual

Product: JCB JS115, JS130, JS145, JS160, JS180 Tracked Excavators Service Repair Manual

Full Download: <https://www.arepairmanual.com/downloads/jcb-js115-js130-js145-js160-js180-tracked-excavators-service-repair-manual/>

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5-js160-js180-tracked-excavators-service-repair-manual/

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## Section 2 - Care and Safety

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## Section 2 - Care and Safety

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# Safety Notices

## Introduction

T1-006

### WARNING

Study the Operator Manual before starting the machine. You must understand and follow the instructions in the Operator Manual. You must observe all relevant laws and regulations. If you are unsure about anything, ask your JCB dealer or employer. Do not guess, you or others could be killed or seriously injured.

INT-1-1-1\_2

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



## **Safety Check List**

### **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

### WARNING

#### Operator Manual

You and others can be injured if you operate or maintain the machine without first studying the Operator Manual. Read the safety instructions before operating the machine. If you do not understand anything, ask your employer or JCB dealer to explain it. Keep the Operator Manual clean and in good condition. Do not operate the machine without an Operator Manual in the cab, or if there is anything on the machine you do not understand.

INT-1-3-2\_2

### 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.

INT-1-3-6

### 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

### 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 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

### WARNING

#### Raised Equipment

Raised equipment can fall and injure you. Do not walk or work under raised equipment unless safely supported.

13-1-1-6

### 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

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** DANGER**

**Lightning**

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

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5-1-1-2

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** 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.

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INT-1-3-10\_2

## 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

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

#### 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

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

### WARNING

#### Work Sites

Work sites can be hazardous. Inspect the site before working on it. Look for potholes, weak ground, hidden rocks etc. 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

### 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**

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**Ramps and Trailers**

Water, mud, ice, grease and oil on ramps or trailers can cause serious accidents. Make sure ramps and trailers are clean before driving onto them. Use extreme caution when driving onto ramps and trailers.

INT-2-2-6

---

**⚠ WARNING**

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**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

---

**⚠ DANGER**

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**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**

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**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

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**⚠ 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**

---

**Reversing**

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

INT-2-2-9\_1

---

**⚠ WARNING**

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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

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**⚠ WARNING**

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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**

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**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

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#### 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

---

#### WARNING

##### Seat Belt

Operating the machine without a seat belt can be dangerous. Before starting the engine, make sure your seat belt is fastened. Check the tightness and condition of the seat belt securing bolts regularly (see maintenance schedules).

INT-2-1-8\_1

---

#### 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

---

#### CAUTION

##### Passengers

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

INT-2-2-2\_1

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#### DANGER

##### Boom Removal

Never remove the boom from the machine as this would severely upset the machine's balance so that in certain ground conditions it could tip backwards.

8-2-8-4

---

#### 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 in the machine.

0179

## 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

### 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

### 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

##### Fluid Under Pressure

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

INT-3-1-10\_2

#### 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

##### 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

##### 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

##### 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

##### Hot Coolant

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

INT-3-2-9\_1

#### 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

#### 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 Trichloroethane 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 for:

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

INT-3-3-2

#### 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

### WARNING

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

HYD-1-3

### 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

#### 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

### 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

### 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

### DANGER

Before removing the boom from the machine, ensure that the counterweight is adequately supported as in certain ground conditions the machine could tip backwards. Never travel or transport the machine with the boom removed.

BF-6-3

### Safety Decals

#### **WARNING**

##### Decals

Decals on the machine warn you of particular hazards. You can be injured if you do not obey the decal safety instructions.

Each decal is attached close to a part of the machine where there is a possible hazard. Make sure replacement parts include warning decals where necessary.

Keep all decals clean and readable. Replace lost or damaged decals. Each decal has a part number printed on it, use this number to order a new decal from your JCB distributor.

INT-3-3-3\_1

#### **WARNING**

If you need eye-glasses for reading, make sure you wear them when reading the safety decals. Decals are strategically placed around the machine to remind you of possible hazards. Do not over-stretch or place yourself in dangerous positions to read the decals.

INT-3-3-4\_1

### Safety Decal Recognition

**Table 1.**

Label	Part No.	Definition
<b>A</b>	817/19470	Warning, Arm or bucket may move; keep clear.
<b>B</b>	JLP0283	Warning, Do not use excavator for lifting loads.
<b>C</b>	817/19660	Instruction, Cold weather conditions. Refer to operators handbook.
<b>D</b>	817/18535	1-Warning, Coolant under pressure. 2-Warning, Risk of severing hands/fingers in rotating parts. 3-Warning, Hot surfaces. 4-Remove ignition key and refer to operator handbook and maintainance manual.
<b>E</b>	817/18536	Warning, Hot surfaces ; Keep hands away.
<b>F</b>	817/18537	Warning, High pressure and hot coolant/system ; Keep hands away.
<b>G</b>	817/18538	Warning, Risk of severing finger/hand in rotating parts; Keep hands away.
<b>H</b>	817/18566	Do not walk or place any body weight in this area.
<b>K</b>	817/18528	Warning counterweight or whole machine may move ; Keep clear..
<b>L</b>	817/02370	Warning, 24V.
<b>M</b>	817/70003	Warning, Risk of trapping fingers/hand in door ; Keep hands away.
<b>N</b>	JHP0111	Warning. No hosing or jet washing in cab.
<b>P</b>	817/70116	Warning, Unexpected movement of part or whole machine ; Move lock lever to the lock position.
<b>Q</b>	817/18541	Warning, Read the operation and maintainance manual..
<b>R</b>	817/19960	Warning, High pressure hydraulic system ; 1-Stop the engine. 2-Depress the rubber bootted pressure relief valve until all the tank pressure is released. 3-Remove filler plug/breather assembly as required.
<b>S</b>	817/18527	Diesel fuel, Warning, Flammable substance; No ignition source.
<b>T</b>		Lubrication chart.Refer to `Chart Definitions' for details.
<b>V</b>		Lifting chart. Refer to `Chart Definitions' for details..
<b>W</b>	817/70117	1-Instruction, Bucket can foul the boom when dipper is swinging inwards. Maintain clearance between bucket and arm. 2-Warning, Danger of collision, Maintain clearance between bucket and cab. 3-Warning, Risk of tripping; raise the control lock lever before exiting. 4-Warning, Risk of injury by crushing; Do not lean out of the front window. 5-Warning, Risk of electrocution; Maintain the minimum clearance recomended by your local electricitysupplier.
<b>X</b>	817/18531	Warning, Edges without protective railings; Keep clear of edges.
<b>Y</b>	817/18532	Warning, Hoses that may eject a high velocity jet capable of penetrating the skin; Remove ignition key and refer to operator handbook and maintainance manual.

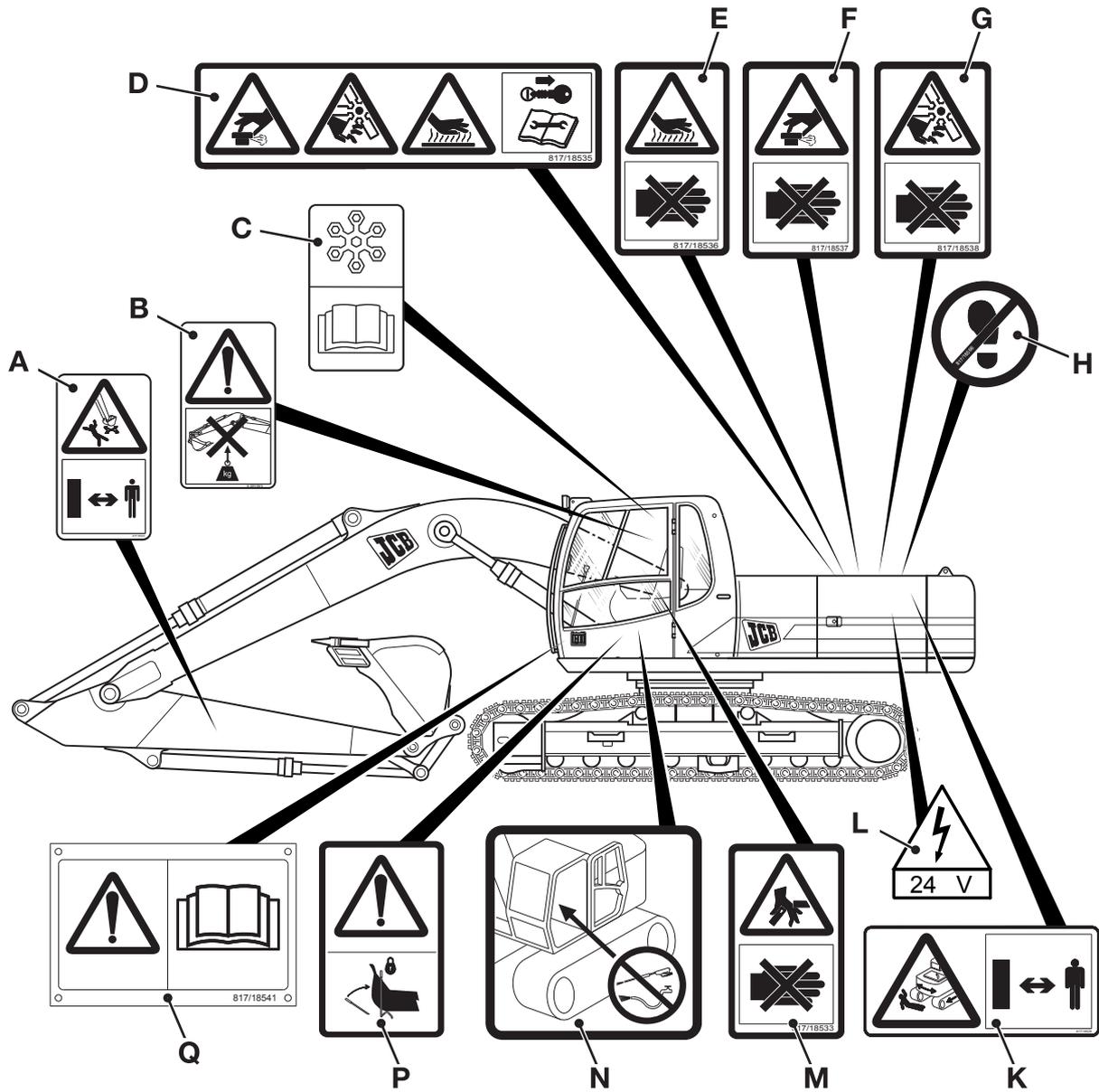


Fig 1.

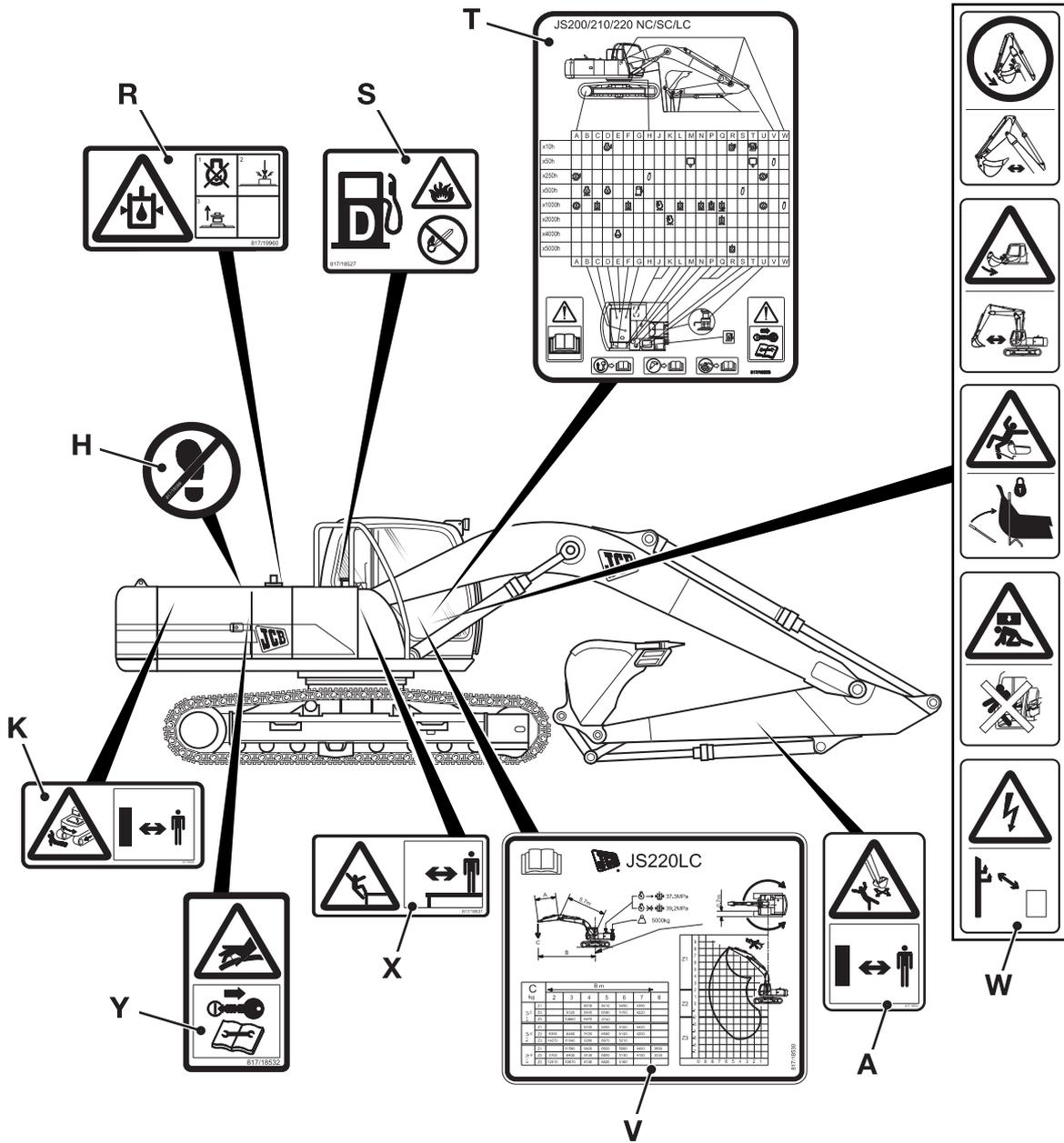


Fig 2.

### Chart Definitions

#### Typical Lubrication Chart

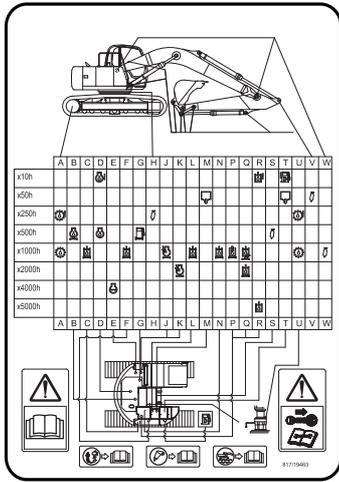


Fig 3.

Table 2. Location Identifier

<b>A</b>	Travel gearbox
<b>B</b>	Engine oil filter
<b>C</b>	Plexus filter
<b>D</b>	Engine oil pan
<b>E</b>	Engine cooling system
<b>F</b>	Servo oil filter
<b>G</b>	Fuel filter
<b>H</b>	Swing ring bearing
<b>J</b>	Air cleaner, outer
<b>K</b>	Air cleaner, inner
<b>L</b>	Drain line filter
<b>M</b>	Fuel separator
<b>N</b>	Hydraulic return filter
<b>P</b>	Hydraulic tank air breather
<b>Q</b>	Suction strainer
<b>R</b>	Hydraulic tank
<b>S</b>	Swing ring gear teeth
<b>T</b>	Fuel tank
<b>U</b>	Slew gearbox
<b>V</b>	Boom/arm grease points
<b>W</b>	Boom/arm grease points

Table 3. Icon Definitions

	Excavator grease
	Engine oil change
	Engine oil filter change
	Engine coolant change
	Engine air filter change
	Engine air filter clean
	Transmission oil change
	Transmission oil level
	Fuel (diesel)
	Fuel filter change
	Hydraulic oil change



Hydraulic tank breather filter change



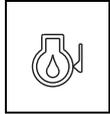
Hydraulic oil filter change



Hydraulic oil filter clean



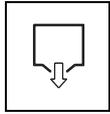
Hydraulic oil level



Engine oil level



Fuel tank level



Drain off water/sediment



When using hammer/crusher/  
pulveriser

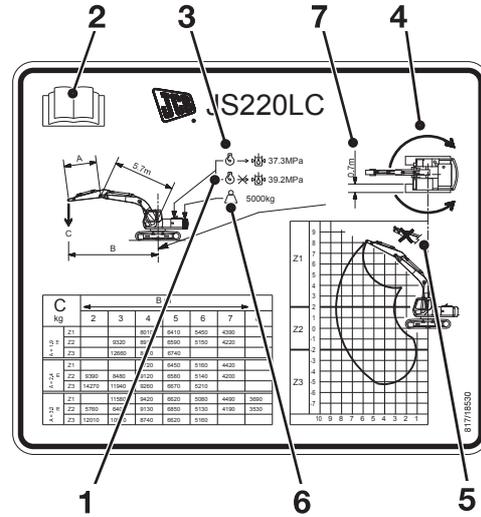


When using bio-degradeable oil



When using in wet or severe  
conditions

**Typical Lifting Chart**



**Fig 4.**

- 1 Holding circuit pressure
- 2 Refer to operators manual before attempting to lift
- 3 Working circuit pressure
- 4 For complete swing of upper structure
- 5 Lift with bucket cylinder retracted
- 6 Mass of counterweight
- 7 Track width indication