



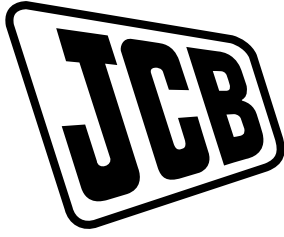
## **OPERATOR'S MANUAL**



**COMPACT EXCAVATOR**  
**8014 CTS, 8016 CTS, 8018 CTS, 8020 CTS**

EN - 9821/6100  
ISSUE 4 - 03/2017

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE



# OPERATOR'S MANUAL

COMPACT EXCAVATOR  
**8014 CTS, 8016 CTS,  
8018 CTS, 8020 CTS**

EN - 9821/6100  
ISSUE 4 - 03/2017

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## Foreword

### The Operator's Manual



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

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

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

### Machine Delivery and Installation

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 (included in this manual) has not yet been completed with you.

Your local JCB Dealer is



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Notes:

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**Acronyms Glossary**

CESAR	Construction Equipment Security and Registration
DEF	Diesel Exhaust Fluid
ECU	Electronic Control Unit
EHTMA	European Hydraulic Tool Manufacturers Association
ESOS	Engine Shut-Off Solenoid
FOGS	Falling Object Guard System
FOPS	Falling Object Protective Structure
HVAC	Heating Ventilation Air Conditioning
ISO	International Organization for Standardization
LCD	Liquid Crystal Display
LED	Light Emitting Diode
PIN	Product Identification Number
PPE	Personal Protective Equipment
RMS	Root Mean Square
ROPS	Roll-Over Protective Structure
SWL	Safe Working Load
TOPS	Tip-Over Protective Structure



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# Introduction

## About this Manual

### Model and Serial Number

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

Model	From:	To:
8014 CTS	2069289	2071289
	2475101	2475500
	2541501	2541670
8016 CTS	2071290	2073290
8018 CTS	2073291	2075291
	2496951	2497950
	2544672	2545670
8020 CTS	2075292	2077292
	2097875	2098875

### Using the Manual

This operator's manual is arranged to give you a good understanding of the machine and its safe operation. It also contains maintenance and technical data.

Read this manual from the front to the back before you use the machine for the first time, even if you have used machines of a similar/same type before as the technical specification, systems and controls of the machine may have changed. 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 dealer or employer. Do not guess, you or others could be killed or seriously injured.

The general and specific warnings in this section are repeated throughout the manual. 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 are different, the text and or the illustration will specify.

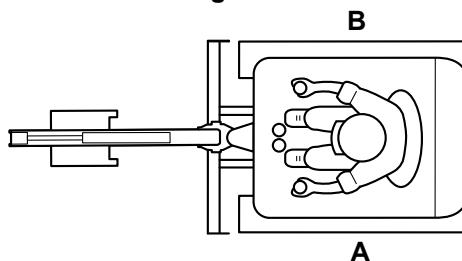
The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this manual.

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

### Left-Hand Side, Right-Hand Side

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

**Figure 1.**



**A** Left

**B** Right

## **Cab/Canopy**

This manual frequently makes references to the cab. For example, 'do not operate the machine without an operator's manual in the cab'. These statements also apply to canopy build machines.

## **Cross References**

In this manual, cross references are made by presenting the subject title in blue (electronic copy only). The number of the page upon which the subject begins is indicated within the brackets. For example: [Refer to: Cross References \(Page 2\)](#).

## **Location of Manual**

Machines fitted with a cab have a operator's manual located in a vinyl document pouch behind the operators seat. Machines fitted with a canopy have a operator's manual located inside a lockable case on the canopy roof.

## Safety

### Safety - Yours and Others

All machinery can be hazardous. When a machine is correctly operated and maintained, it is a safe machine to work with. 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 inform you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB dealer to explain them.

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 of 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 work until you are sure that you and those around you will be safe.

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

Remember:

- Be careful
- Be alert
- Be safe.

### Safety Warnings

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

The signal word 'DANGER' indicates a hazardous situation which, if not avoided, will result in death or serious injury.

The signal word 'WARNING' indicates a hazardous situation which, if not avoided, could result in death or serious injury.

The signal word 'CAUTION' indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

The signal word 'Notice' indicates a hazardous situation which, if not avoided, could result in machine damage.

The safety alert system (shown) also helps to identify important safety messages in this manual and on the machine. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

**Figure 2. The safety alert system**



## General Safety

### Training

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's 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. In some markets and for work on certain jobsites you may be required to have been trained and assessed in accordance with an operator competence scheme. Make sure that you and your machine comply with relevant local laws and jobsite requirements - it is your responsibility.

### 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.

### Clothing

You can be injured if you do not wear the correct clothing. Loose clothing can get caught in the machinery. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained. Remove rings, watches and personal jewellery.

### 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.

### 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.

### 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.

### 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.

### 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.

### Raised Machine

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

### Lightning

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

### Machine Modifications

This machine is manufactured in compliance with prevailing legislative requirements. It must not be altered in any way which could affect or invalidate its compliance. For advice consult your JCB dealer.

## **Clothing and Personal Protective Equipment (PPE)**

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.





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# About the Product

## Introduction

### General

Before you start using the machine, you must know how the machine operates. Use this part of the 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 dealer.

### Name and Address of the Manufacturer

JCB Compact Products Limited, Harewood Estate, Leek Road, Cheadle, Stoke On Trent, United Kingdom, ST10 2JU

### Product Compliance

Your JCB product was designed to comply with the laws and regulations applicable at the time of its manufacture for the market in which it was first sold. In many markets, laws and regulations exist that require the owner to maintain the product at a level of compliance relevant to the product when first produced. Even in the absence of defined requirements for the product owner, JCB recommend that the product compliance be maintained to ensure safety of the operator and exposed persons and to ensure the correct environmental performance. Your product must not be altered in any way which could affect or invalidate any of these requirements. For advice consult your JCB dealer.

For its compliance as a new product, your JCB and some of its components may bear approval numbers and marking's, and may have been supplied with a Declaration/Certificate of Conformity. These marking's and documents are relevant only for the country/region in which the product was first sold to the extent that the laws and regulations required them.

Re-sales and import/export of products across territories with different laws and regulations can cause new requirements to become relevant for which the product was not originally designed or specified. In some cases, pre owned products irrespective of their age are considered new for the purposes of compliance and may be required to meet the latest requirements which could present an insurmountable barrier to their sale/use.

Despite the presence of any compliance related marking's on the product and components, you should not assume that compliance in a new market will be possible. In many cases it is the person responsible for import of a pre owned product into a market that becomes responsible for compliance and who is also considered the manufacturer.

JCB may be unable to support any product compliance related enquiry for a product which has been moved out of the legislative country/region where it was first sold, and in particular where a product specification change or additional certification would have been required in order for the product to be in compliance.

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## Description

### General

JCB Compact excavators are self-propelled tracked excavators with an upper structure capable of 360° rotation. They excavate, elevate, swing and discharge material by the action of a bucket fitted to the boom and dipper, without moving the undercarriage during any part of the working cycle of the machine.

### Intended Use

The machine is intended to be used in normal conditions for the applications and in the environmental conditions as described in this manual.

When used normally with a bucket fitted to the machine the work cycle consists of, digging, elevating, slewing and the discharging of material without movement of the undercarriage.

Applications include earthmoving, road construction, building and construction, landscaping and similar applications.

An excavator can also be used for object handling if it is suitably equipped with relevant parts and systems. [Refer to: Lifting and Loading \(Page 65\)](#).

The machine is not intended for use in mining and quarrying applications, in demolition activities, forestry, any use underground or in any kind of explosive atmosphere.

The machine must not be used in the following scenarios because of the risk of overturning; used for forestry, used with attachments of unknown weight, used on surfaces of unknown stability. This list is not exhaustive.

If the machine is to be used in applications where there is a high silica concentration, risk due to materials containing asbestos or similar hazards, additional protective measures such as the use of PPE (Personal Protective Equipment) may be required.

The machine should not be operated by any person who does not have an appropriate level of qualification, training or experience of use of this type of machine.

Prior to use of the machine, its suitability (size, performance, specification etc.) should be considered with regards to the intended application and any relevant hazards that may exist. Contact your JCB dealer for support in determining the appropriate JCB machine, attachment and any optional equipment that is suitable for the application and environment.

### Log Moving/Object Handling

Do not use the machine to move or handle logs unless sufficient log protection is installed. You could cause serious injury to yourself and damage to the machine. For more information, contact your JCB dealer.

### Optional Equipment and Attachments

A wide range of optional attachments are available to increase the versatility of your machine. Only the JCB approved attachments are recommended for use with your machine. Contact your JCB dealer for the full list of approved attachments available.

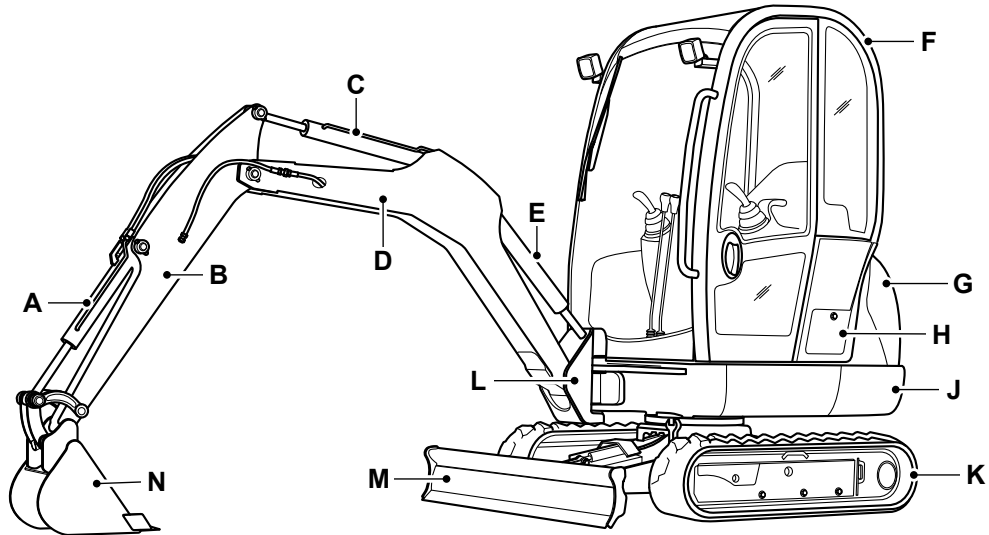
### Danger Zone

The danger zone is any zone within and/or around the machinery in which a person is subject to a risk to their health or safety. The danger zone includes the area in immediate proximity to any hazardous moving parts, areas into which working equipment and attachments can be moved to quickly, the machine normal stopping distances and also areas into which the machine can quickly turn under normal conditions of use. Depending on the application at the time, the danger zone could also include the area into which debris, from use of an attachment or working tool, could be projected and any area into which debris could fall from the machine. During the operation of the machine, keep all persons out of the danger zone. Persons in the danger zone could be injured.

Before you do a maintenance task, make the product safe.

## Main Component Locations

Figure 3.



- A Bucket ram
- C Dipper ram
- E Boom ram
- G Engine cover
- J Chassis
- L Kingpost
- N Bucket

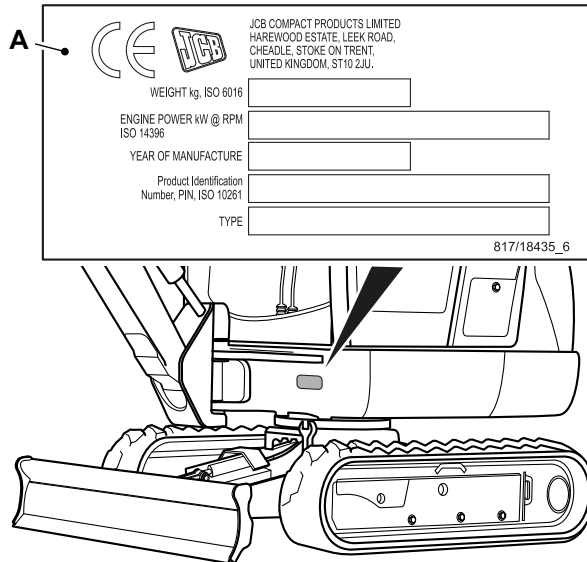
- B Dipper (part of the excavator arm)
- D Boom (part of the excavator arm)
- F Cab (contains the operator station)
- H Tool box
- K Undercarriage
- M Dozer blade

## Product and Component Identification

### Machine

Your machine has an identification plate mounted as shown. The product identification number (PIN), weight, engine power, year of manufacture and serial number of the machine are shown on the plate.

**Figure 4.**



**A** Identification plate

The machine model and build specification are indicated by the PIN. The PIN has 17 digits and must be read from left to right. For example, JCB08025L01226500.

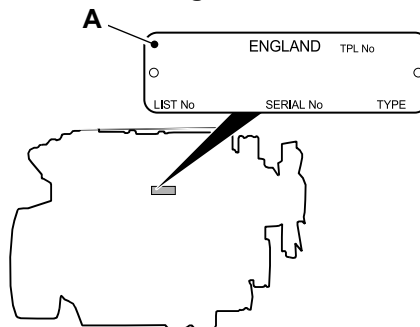
**Table 1. Explanation of the PIN**

Digit	Description
1 to 3	World manufacturer identification. For example, JCB = UK Build.
4 to 8	Machine type and model. For example, 08025 = 8025.
9	Random check Letter. The check letter is used to verify the authenticity of a machine's PIN.
10 to 17	Machine serial number.

### Engine

The engine data label is located on the cylinder block as shown.

**Figure 5.**



**A** Engine data label

The data label includes the engine identification number. The engine identification number has 15 digits and must be read from left to right. For example, GJU65692500405P.

**Table 2. Explanation of the engine identification number**

Digit	Description
1 to 2	Engine type. For example, GJ = Naturally aspirated.
3	Country of manufacture. For example, U = United Kingdom.
4 to 8	Build number.
9 to 14	Engine serial number.
15	Year of manufacture.

## Operator Protective Structure

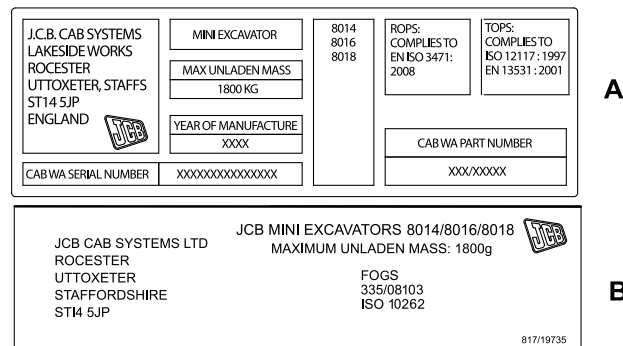
**▲ WARNING** Modified and wrongly repaired ROPS, TOPS and FOGS are dangerous. Do not modify the TOPS. Do not attempt to repair the ROPS, TOPS and FOGS. If the ROPS, TOPS and FOGS has been in an accident, do not use the machine until the structure has been examined and repaired. This must be done by a qualified person. For assistance, contact your JCB dealer. Failure to take precautions could result in death or injury to the operator.

**WARNING** Machines with a ROPS, FOPS, FOGS or TOPS are equipped with a seat belt. The ROPS, FOPS, FOGS or TOPS is designed to give you protection in an accident. If you do not wear the seat belt you could be thrown off the machine and crushed. You must wear a seat belt when using the machine. Fasten the seat belt before starting the engine.

Machines built to the ROPS (Roll-Over Protective Structure) and TOPS (Tip-Over Protective Structure) standards have an identification label attached to the cab/canopy.

A bolt on FOGS (Falling Object Guard System) is available which also carries a certified label. This label certifies the cab to the FOGS standard.

**Figure 6.**



**A** ROPS and TOPS identification label

**B** FOGS certified label

When a machine is used in an application with the risk of falling objects, the machine must be equipped with the optional FOGS. The FOGS is compliant to ISO10262 level 1 and is intended for protection from small objects, for example small rocks, small debris and other small objects encountered in operations such as highway maintenance, landscaping and other construction site services.

## Safety Labels

### General

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

The 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 put 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.

Keep all of the safety labels clean and readable. Replace a lost or damaged safety label. Make sure the replacement parts include the 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 dealer.

### Safety Label Identification

Figure 7.

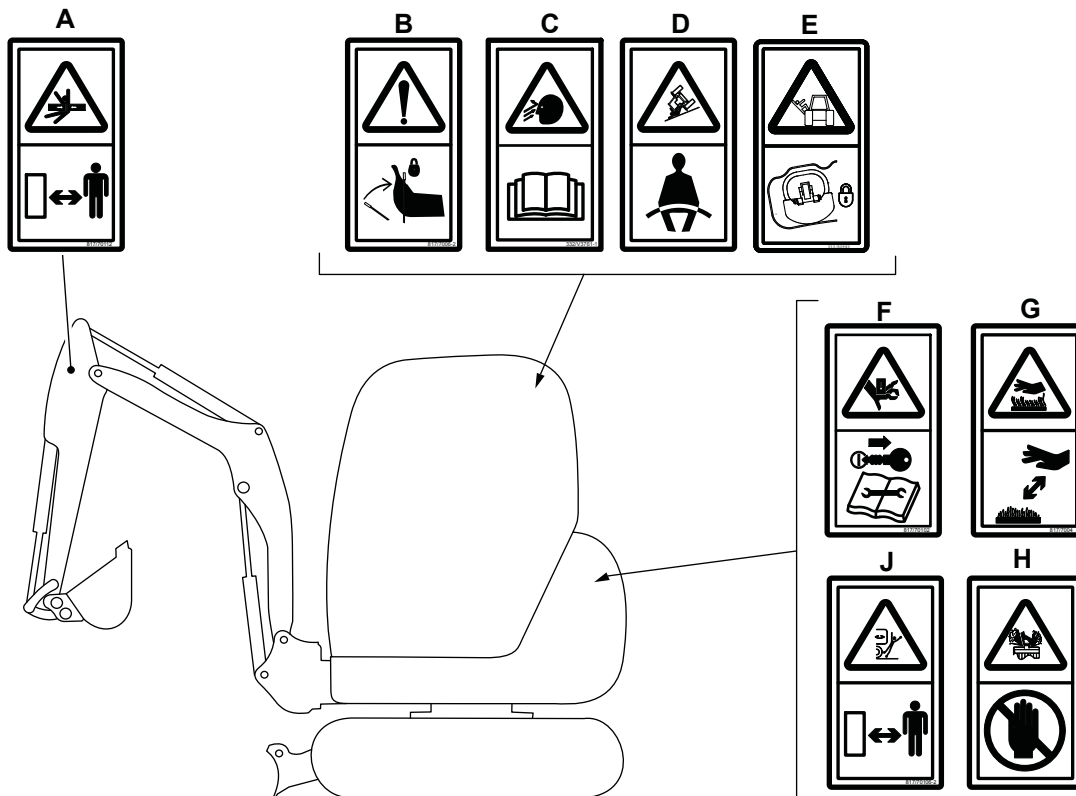


Table 3. Safety labels

Item	Part Number	Description	Qty
A	817/70112	Crush hazard. Keep a safe distance from the moving parts.	2
B	817/70006	Fall. Unexpected machine movement because of accidental contact with the machine controls if the hydraulic functions are not isolated.	1
C	332/V3761	Flying debris warning. <a href="#">Refer to: ttachments (Page 87).</a>	1
D	817/70029	Crush hazard. Wear the seatbelt when you operate the machine.	1
E	333/R0983	Fall. Unexpected machine movement because of accidental contact with the controls when the hydraulic system is not isolated.	1
F	817/70102	Crushing of fingers or hands. Remove the starter key and refer to the Service Manual before you start maintenance work.	1
G	817/70004	Burns to fingers and hands. Stay a safe distance away. Warning.	1

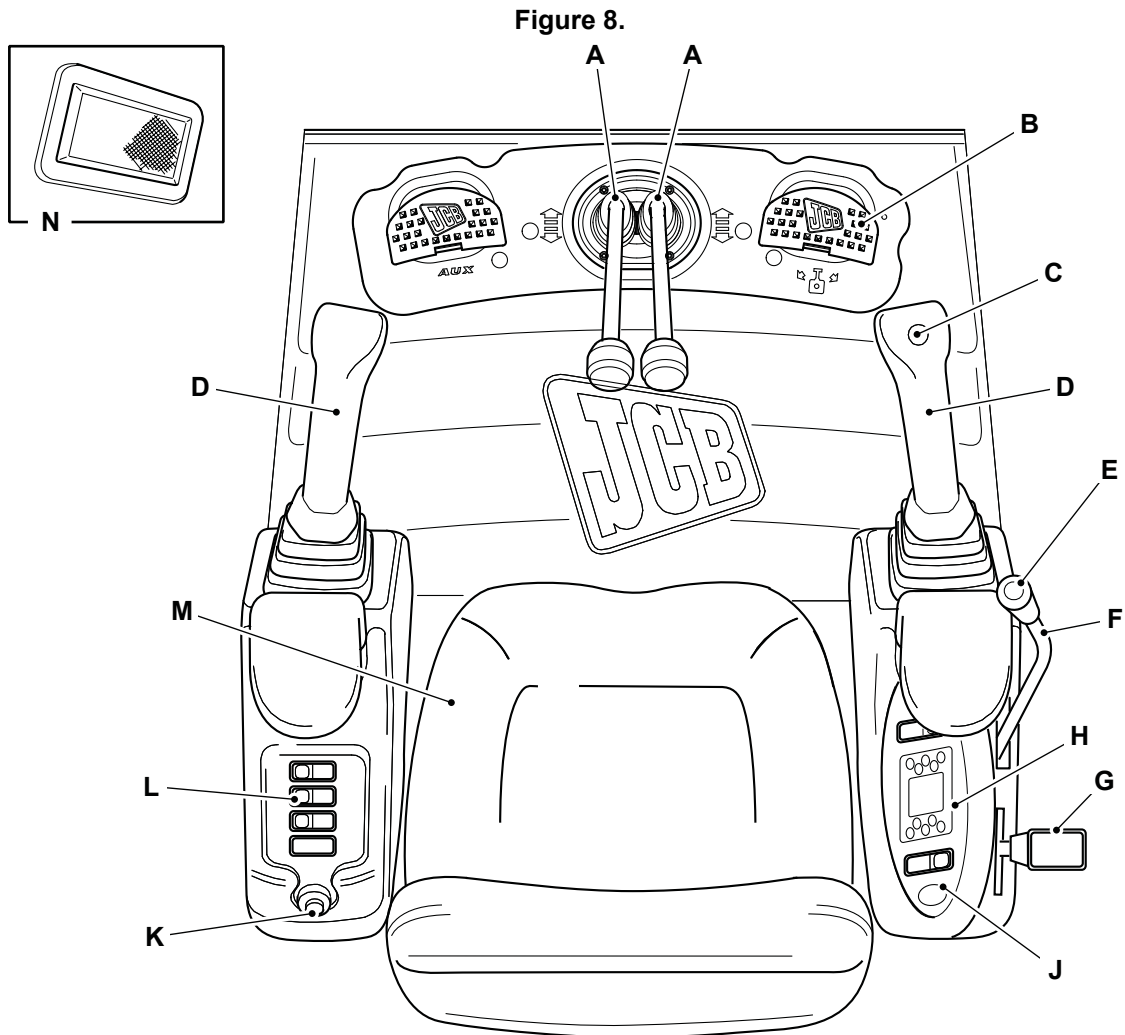


<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>Qty</b>
H	817/70005	Hot fluid under pressure. <a href="#">Refer to: Cooling System (Page 141).</a>	1
J	817/70106	Strike to whole body (machine swing). Keep a safe distance from the machine.	1



## Operator Station

### Component Locations



**A** Track controls Refer to: [Track Controls \(Page 52\)](#).

**C** Horn Refer to: [Excavator Arm Controls \(Page 58\)](#).

**E** Two-speed tracking switch

**G** Hand throttle control Refer to: [Hand Throttle Control \(Page 52\)](#).

**J** Ignition switch Refer to: [Ignition Switch \(Page 15\)](#).

**L** Console switches Refer to: [Console Switches \(Page 16\)](#).

**N** Cab interior light Refer to: [Cab Interior Light \(Page 15\)](#).

**B** Swing/auxiliary pedal Refer to: [Excavator Arm Controls \(Page 58\)](#).

**D** Excavator controls Refer to: [Excavator Arm Controls \(Page 58\)](#).

**F** Dozer blade control Refer to: [Dozer Blade Controls \(Page 61\)](#).

**H** Instrument panel Refer to: [Instrument Panel \(Page 53\)](#).

**K** Auxiliary power socket Refer to: [Auxiliary Power Socket \(Page 74\)](#).

**M** Operator seat Refer to: [Operator Seat \(Page 36\)](#).

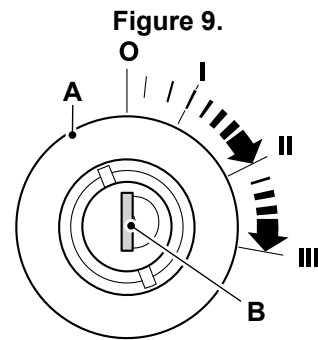
## Interior Switches

### Ignition Switch

The ignition key operates the four-position ignition switch. The ignition key can only be inserted or removed in position 0.

If the engine fails to start, the ignition key must be returned to position 0 before the starter motor is re-engaged.

Do not operate the starter motor for more than 20s without the engine firing. If the engine fires but does not fully start, let the starter motor cool for at least 2min between starts.



A Ignition switch

B Ignition key

**Table 4. Switch Positions**

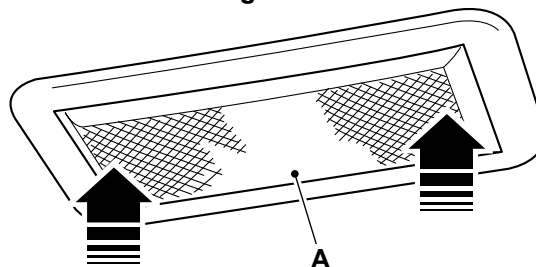
Position	Function
0	Off/Stop the Engine: Turn the ignition key to this position to stop the engine. Make sure the controls are in neutral and the excavator and dozer are lowered before you stop the engine.
I	On: Turn the ignition key to this position to connect the battery to all of the electrical circuits. The ignition key will return to this position when it is released from position II or position III.
II	Heat position. Turn the ignition key to this position to operate the glow plugs or grid heater (if applicable).
III	Start: Turn the ignition key to this position to operate the starter motor and turn the engine. The ignition switch has an inhibitor to stop the ignition switch being turned ON when the engine is running.

### Cab Interior Light

Press either end of the light unit 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.

**Figure 10.**



A Cab interior light

## Console Switches

### General

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

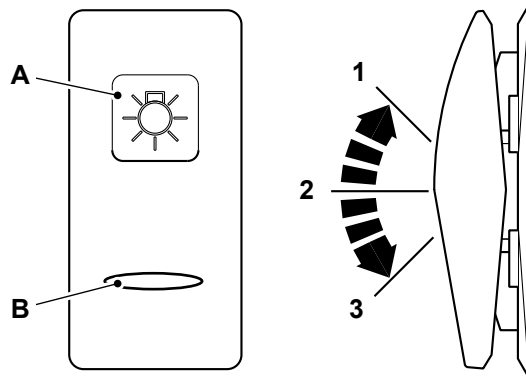
Each switch has a graphic symbol to show the function of the switch. Before you operate a switch, make sure that you understand its function.

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

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

The light bar illuminates to show that the switch function is active.

Figure 11.



A Graphic symbol

B Light bar

### Work Lights



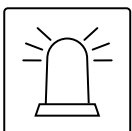
Two or three position rocker switch. The switch functions operate when the ignition switch is in the on position.

Position : 1 = Off

Position : 2 = Boom work light on

Position : 3 = Boom and cab work lights on (if installed)

### Beacon



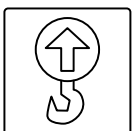
Two or three position rocker switch. The switch functions operate when the ignition switch is in the on and off positions.

Position : 1 = Off

Position : 2 = Beacon on

Refer to: [Beacon \(Page 47\)](#).

### Overload Warning System



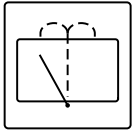
Two position rocker switch. The switch functions operate when the ignition switch is in the on position.

Position : 1 = Off

Position : 2 = On

Refer to: [Overload Warning System \(Page 66\)](#).

## Window Wipers



Three position rocker switch. The switch functions operate when the ignition switch is in the on position. The wiper will self-park when switched off.

Position : 1 = Off

Position : 2 = On

Position : 3 = Washer on (if installed)



# Operation Introduction

## General

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.

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.

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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