

JCB 457 OPERATOR'S MANUAL



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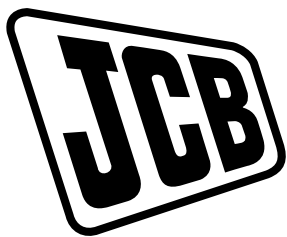
OPERATOR'S MANUAL



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457

EN - 9821/3700 ISSUE 4 - 05/2017

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE



OPERATOR'S MANUAL

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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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Acronyms Glossary

ATC	Automatic Temperature Control
CAN	Controller Area Network
CESAR	Construction Equipment Security and Registration
DEF	Diesel Exhaust Fluid
ECU	Electronic Control Unit
ETRTO	European Tyre and Rim Technical Organisation
FOPS	Falling Object Protective Structure
HVAC	Heating Ventilation Air Conditioning
ICCO	Intelligent Clutch Cut Off
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
RPM	Revolutions Per Minute
SAE	Society of Automotive Engineers
SCR	Selective Catalytic Reduction
SRS	Smooth Ride System
TCU	Transmission Control Unit



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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:
457	2244514	2246514

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.

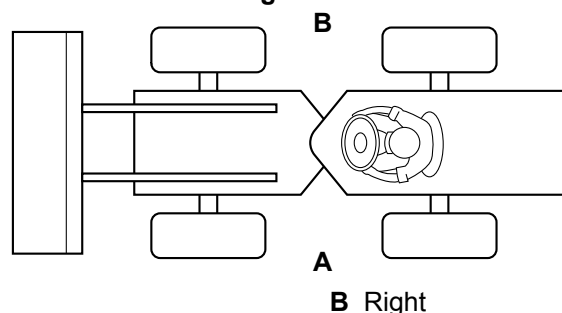
The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this manual.

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.](#)

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.

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 Earthmovers Limited, Lakeside Works, Rocester, Staffordshire, United Kingdom, ST14 5JP.

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.

Description

General

A self-propelled wheeled machine with an integral front mounted shovel-supporting structure and linkage.

The machine can load or excavate through the forward motion of the machine, and can lift, transport and discharge material.

Intended Use

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

If the machine is used for other applications or in dangerous environments, for example in a flammable atmosphere or in areas with dust containing asbestos, special safety regulations must be obeyed and the machine must be equipped for use in these environments.

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.

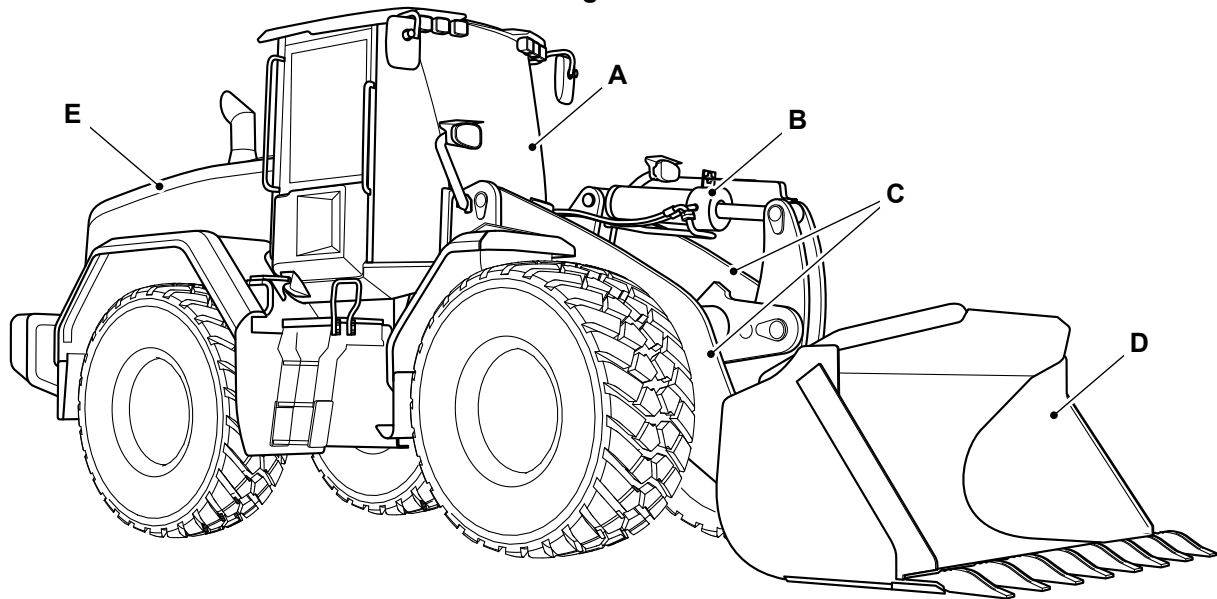
Danger Zone

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 ROPS (Roll-Over Protective Structure)/FOPS
(Falling Object Protective Structure) cab
C Loader arms
E Engine cover

B Ram
D Shovel

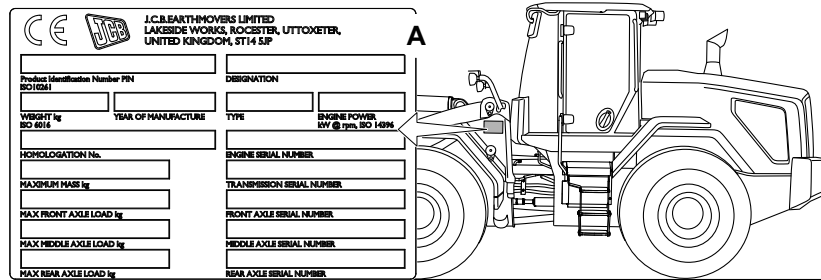
Product and Component Identification

Machine

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

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.

Figure 4.



A Identification plate (location)

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

Table 1. Typical PIN

JCB	457	Z	S	D	02244514
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Table 2. Explanation of the PIN

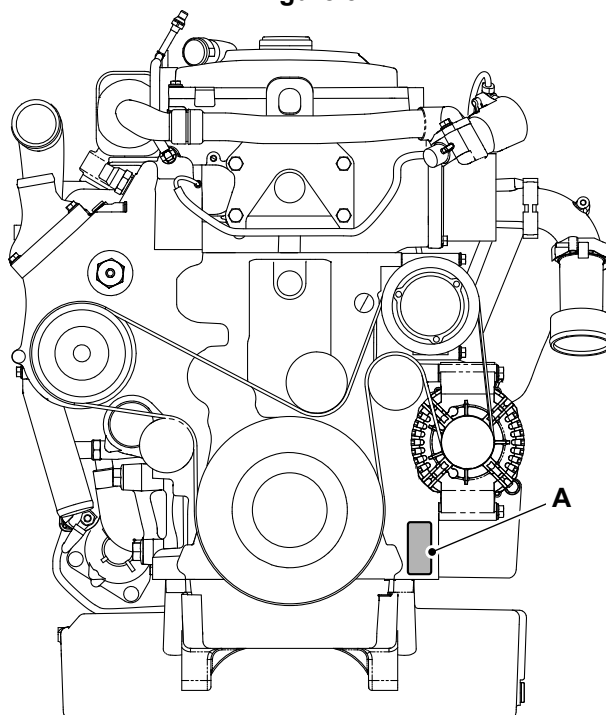
Digit	Description
1 to 3	World manufacturer identification. For example, JCB = UK Build.
4 to 6	Machine type and model
7	O = HT Loader End, Z = ZX Loader End
8	Designation: O = Non-Farmmaster, S = Farmmaster, I = India
9	Year of manufacture: 7 = 2007, 8 = 2008, 9 = 2009, A = 2010, B = 2011, C = 2012
10 to 17	Machine serial number

Engine

The engine data plate is attached to the rear face of the crankcase below the alternator as shown.

The data label includes the engine identification number.

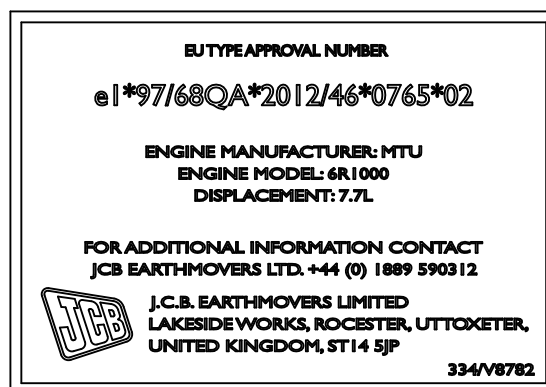
Figure 5.



A Engine data label

An additional engine EU approval decal is also found under the main machine data plate.

Figure 6.



Operator Protective Structure

ROPS and FOPS Data Plate

▲ WARNING You could be killed or seriously injured if you operate a machine with a damaged or missing ROPS/FOPS/FOGS. If the ROPS/FOPS/FOGS 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/FOGS certification.

WARNING Do not use the machine if the falling objects protection level provided by the structure is not sufficient for the application. Falling objects can cause serious injury.

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.

A machine built to the ROPS (Roll-Over Protective Structure)/FOPS (Falling Object Protective Structure) standard has a data plate attached to the inside of the cab.

Figure 7.

J.C.B. CAB SYSTEMS LAKESIDE WORKS ROCESTER UTTONGETER, STAFFS ST14 5JP ENGLAND		LOADING SHOVEL WHEELED		OECD APPROVAL NUMBER	
		MAX UNLADEN MASS XXXX KG		ROPS COMPLIANCE EN ISO 3471:2008	
		YEAR OF MANUFACTURE XXXX		FOPS COMPLIANCE EN ISO 3448:2008 LEVEL 2	
		WA SERIAL NUMBER XXXXXXXXXXXXXXXX		WA PART NUMBER XXX/XXXXX	

If the machine is used in any application where there is a risk of falling objects then a FOPS must be installed. For further information, contact your JCB dealer.

The FOPS has a data plate attached. The data plate indicates what level protection the structure provides.

There are two levels of FOPS:

- Level I Impact Protection - impact strength for protection from small falling objects (e.g. bricks, small concrete blocks, hand tools) encountered in operations such as highway maintenance, landscaping and other construction site services.
- Level II Impact Protection - impact strength for protection from heavy falling objects (e.g. trees, rocks) for machines involved in site clearing, overhead demolition or forestry.

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 8.

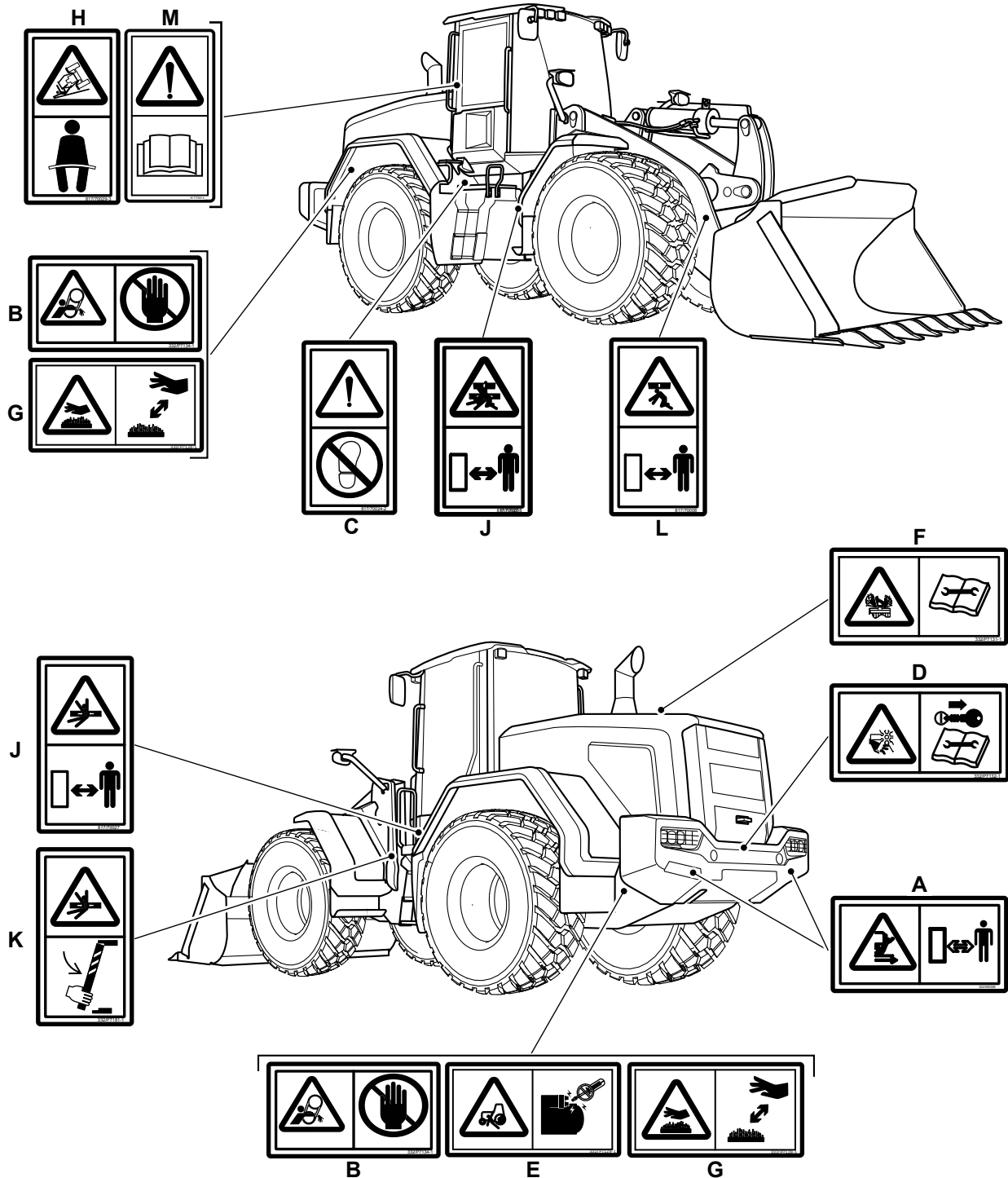


Table 3. Safety Labels

Item	Part No.	Description	Qty.
A	332/W6368	Strike. Keep clear of the reversing machine.	2
B	332/P7134	Entanglement hazard. Do not touch.	2
C	817/70024	Warning. Do not use as a step.	1

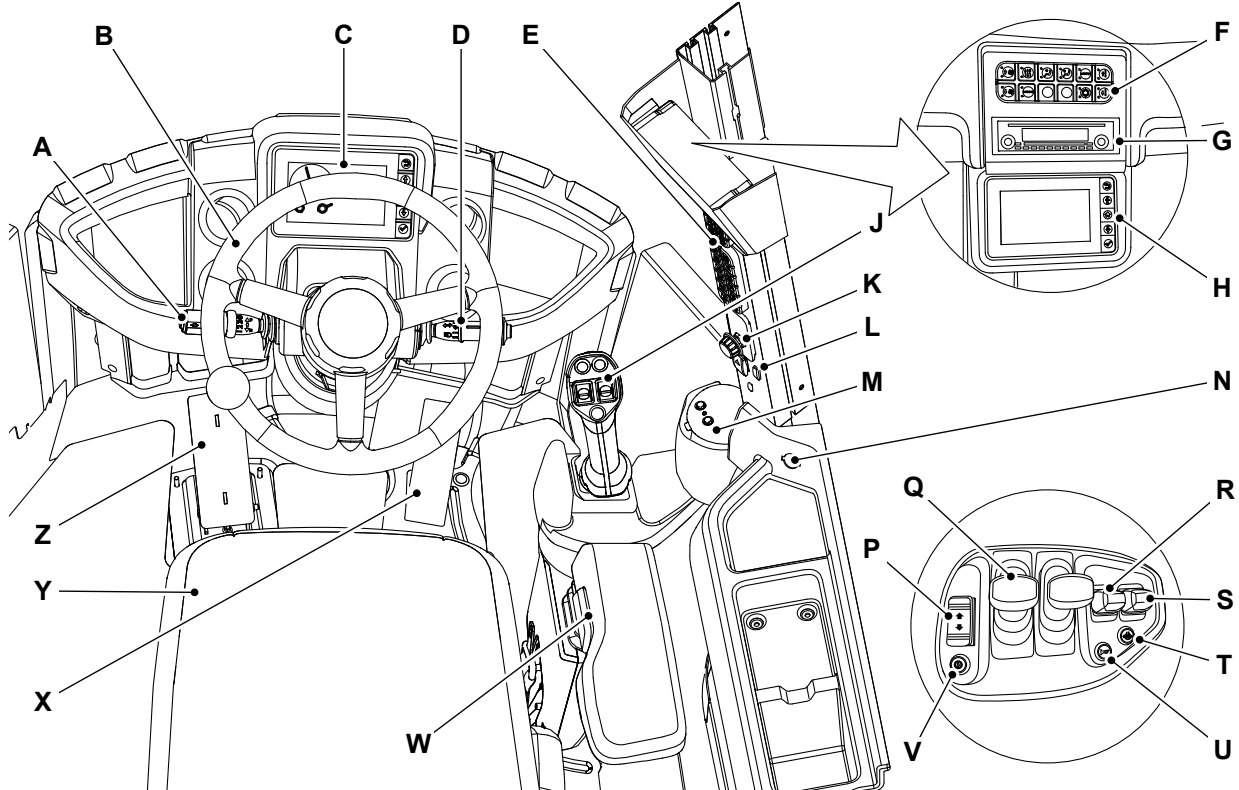


Item	Part No.	Description	Qty.
D	332/P7132	Severing of hands and fingers. Keep clear of/do not reach into rotating parts. Read the Service Manual.	1
E	332/P7129	Run over hazard. Start the engine from the operator's seat only. Do not short across the terminals.	1
F	332/P7131	Pressure hazard. Read the Service Manual.	1
G	332/P7128	Burns to fingers and hands. Stay a safe distance away.	2
H	817/70029	Crush hazard. Wear seat belt.	1
J	817/70027	Crushing of whole body. Keep a safe distance.	2
K	332/P7181	Crushing of whole body. Attach/use the support or prop to lockout for service, maintenance or any access.	1
L	817/70008	Crushing of whole body. Keep a safe distance from machine.	2
M	817/70014	Warning. Read the Operator's Manual before you operate the machine.	1

Operator Station

Component Locations

Figure 9.



- A Transmission [Refer to: Drive Controls.](#)
- C Front display panel [Refer to: Instruments.](#)
- E Console switches [Refer to: Console Switches.](#)

G Radio

J Proportional lever controls [Refer to: Operating Levers/Pedals.](#)

L Park brake switch [Refer to: Park Brake.](#)

N Starter switch [Refer to: Ignition Switch.](#)

Q Multi lever controls [Refer to: Drive Controls.](#)

S Secondary auxiliary controller (option)

U Horn

W Armrest [Refer to: Armrest.](#)

Y Seat [Refer to: Operator Seat.](#)

B Steering wheel [Refer to: Steering Wheel.](#)

D Multi purpose steering column switch [Refer to: Multi-Purpose Switch.](#)

F ATC (Automatic Temperature Control) panel or optional manual HVAC (Heating Ventilation Air Conditioning) controls [Refer to: Air-Conditioning Controls.](#)

H Secondary display panel (option) [Refer to: Instruments.](#)

K Rotary switch panel [Refer to: Instruments.](#)

M Coffee machine (option)

P Forward reverse switch [Refer to: Forward, Neutral and Reverse Switch.](#)

R Primary auxiliary controller (option) [Refer to: Auxiliary Circuit Controls.](#)

T Differential lock

V Transmission kickdown switch [Refer to: Transmission Kickdown Switch.](#)

X Accelerator pedal [Refer to: Accelerator Pedal.](#)

Z Service brake pedal [Refer to: Service Brake Pedal.](#)

Interior Switches

Ignition Switch

The ignition key operates the 4-position ignition switch. The ignition key can only be inserted or removed in position O.

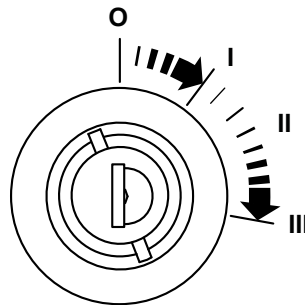
If the engine fails to start, the ignition key must be returned to position O before the starter motor is re-engaged.

Do not operate the starter motor for more than 10s without the engine firing. If the engine fires but does not fully start, do not operate the starter for more than 40s. Let the starter motor cool for at least 2min between starts.

Table 4. Switch positions

	Function
O	Turn the ignition key to this position to stop the engine. Make sure the transmission is in neutral, the attachments are lowered and the park brake is engaged before you stop the engine
I	Turn the ignition key to this position to connect the battery to all of the electrical circuits (except the lights and hazard warning lights which are permanently live). The ignition key will return to this position when it is released from position II or III
II	This position is not used
III	Turn the ignition key to this position to operate the starter motor which turns the engine. (Only when the transmission is in neutral)

Figure 10.



Multi-Purpose Switch

Direction Indicators

Push the stalk forwards to indicate a left turn. Pull the stalk backwards to indicate a right turn. Place in central position to cancel.

Windscreen Wiper

Rotate the switch barrel to activate and cancel the windscreen wipers. The wiper speed can vary dependant on machine specification.

Single Speed (Standard)

0 = Off

I = On

Two Speed (Optional)

J = Intermittent wipe

0 = Off

I = Slow

II = Fast

Windscreen Washer

Push the button to activate the windscreen washer. Allow the stalk to spring back to central position when finished.

Horn

Push the button to activate the horn. Allow the stalk to spring back to central position when finished.

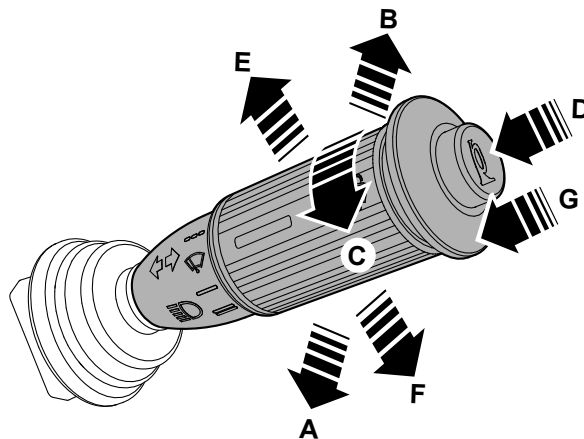
Headlights Flash

Lift the stalk upwards to flash the headlights. Allow the stalk to spring back to central position when finished.

Main Beam

When the road lights are switched on via main switch on console, push the stalk downwards to turn on the main beam. Pull the stalk upwards to the central position to turn off main beam.

Figure 11.



- A** Backwards - Right turn
- C** Rotate - Wiper on and off
- E** Upwards - Headlights flash
- G** Windscreen washer

- B** Forwards - Left turn
- D** Horn
- F** Downwards - Main beam

Cab Interior Light

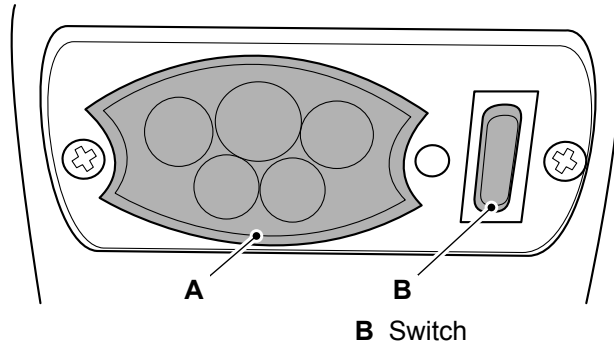
Three position switch. Make sure the cab interior light is turned off when you intend to leave the machine for a long period of time.

Position : 1 = Interior light and ambient light off

Position : 2 = Interior light operates when cab door open, ambient light comes on when side lights switched on

Position : 3 = Interior light comes on permanently

Figure 12.



A Cab interior light

B Switch

Console Switches

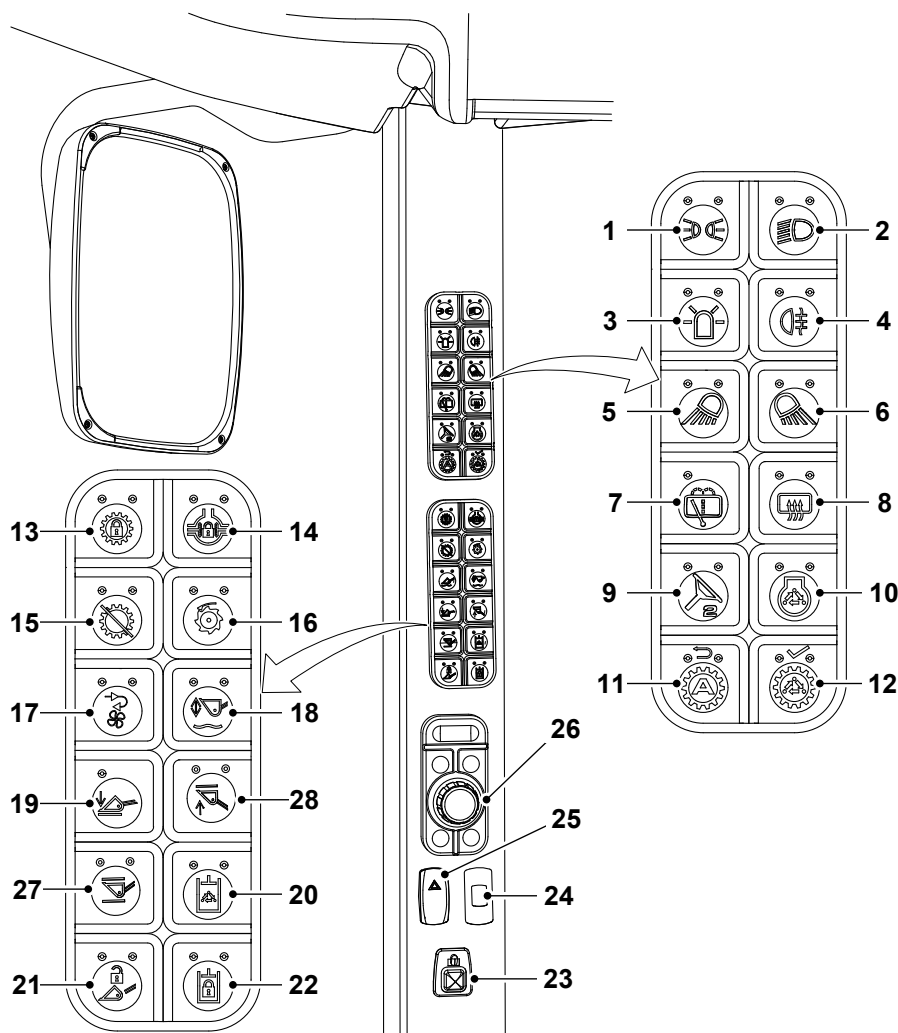
General

The console switches may change according to machine specifications. Some are used as options.

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 push button switches symbol lights up to show that the switch function is active. If there are more than one option active two lights are shown by the two red LED (Light Emitting Diode)'s.

Figure 13.



The indicator lamp on the button will illuminate to indicate that the switches are on in position.

1. Road light switch: The switch functions operate when the ignition switch is in the off position. The button turns on the machine's front and rear side lights. A second press will turn off the side lights along with the headlamps and worklamps.
2. Headlight switch: The switch function operate when the side lights are on and the ignition switch is in the on position. The button turns on the machine's front headlamps. A second press will turn the headlamps off.
3. Beacon switch: The switch functions operate when the ignition switch is in the off position. The button turns on the machine's roof-mounted rotating beacon. A second press will turn the beacon off.
4. Rear fog light switch: The switch function operate when the headlamps are on in position. The button turns on the machine's high-intensity rear fog lamp. A second press will turn the fog lamp off.

5. Front work lamps switch: The button turns on the machine's high-intensity front work lamps. If additional front work lamps are installed a second press will turn these on. A subsequent press will turn off all front work lamps.
 - 5.1. The indicator lamps on the button will illuminate to indicate that the first and second sets of lamps are on.
6. Rear work lamps: The switch function operate when the road lights are turned on. The button turns on the machine's high-intensity rear work lamps. If additional rear work lamps are installed a second press will turn these on. A subsequent press will turn off all front work lamps.
 - 6.1. The indicator lamps on the button will illuminate to indicate that the first and second sets of lamps are on.
7. Rear wash/wipe switch: The button turns on the rear wiper. A second press will turn off the wiper. Pressing and holding the button will wash and wipe the window.
8. Heated rear screen switch: The button turns on the heated rear screen and heated mirrors if installed. The output will turn off automatically after few minutes as specified or if the button is pressed for a second time.
Duration: 10min
9. Secondary steering switch: The button operates the electric backup steering system when the machine is not moving. Use this function to test that the system can successfully pressurise the machine's steering circuit. When pressure is detected in this circuit the secondary steer indicator lamp on the dashboard will illuminate.
10. Engine mode switch: The button cycles through the available engine operating modes. Use this function to increase efficiency by using the most appropriate mode for the current machine duty. Available modes are normal for increased fuel economy and power for maximum performance.
 - 10.1. The indicator lamp on the button will illuminate to show the power mode has been selected. Normal mode is selected when the lamp is off.
11. Transmission auto mode switch: The button turns on the transmission auto shift mode. With auto mode turned on the machine will select the most appropriate gear automatically to improve driveability and efficiency.
12. Not used.
13. Torque converter lockup switch: The button turns on the automatic lockup mode. With auto lockup mode turned on the machine will couple the engine directly to the transmission, bypassing the torque converter and improving performance and increasing efficiency.
14. Auto differential lockup switch: The button turns on the automatic front axle differential lock. With auto differential lock mode turned on the machine will lock the two front wheels together, reducing wheel slip and improving traction in slippery conditions.
15. ICCO (Intelligent Clutch Cut Off) switch: The button turns on the ICCO function. With this function turned on the machine will intelligently reduce drive from the transmission when the brakes are pressed increasing efficiency of the machine and diverting all available power to the hydraulics.
16. Constant flow switch: The button turns on the constant flow function available on both auxiliary services. Constant flow allows the auxiliary hydraulics to be operated without the need for keeping a hand on the control lever. This is particularly useful when operating attachments for long periods of time.
17. Fan reverse switch
18. SRS (Smooth Ride System) switch: The button turns on the automatic SRS. Smooth ride mode provides more comfort to the operator when travelling on an uneven surface and will activate automatically above a set speed. A second press will turn off the SRS.
19. Detents switch: The button turns on the loader controller detent functions. The detents hold the loader control in operation until the arms / shovel reach the return to dig, float and boom kick out positions. A second press will turn off the function.

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