



OPERATOR'S MANUAL



**BACKHOE LOADER
3CX, 4CX, 5CX**

EN - 9831/0400 ISSUE 8 - 03/2018

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE



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

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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



Notes:



Contents	Page No.
Acronyms Glossary	ix
Introduction	
About this Manual	
Model and Serial Number	1
Using the Manual	1
Left-Hand Side, Right-Hand Side	1
Cab/Canopy	1
Cross References	2
Location of Manual	2
Safety	
Safety - Yours and Others	3
Safety Warnings	3
General Safety	4
Clothing and Personal Protective Equipment (PPE)	5
About the Product	
Introduction	
General	7
Name and Address of the Manufacturer	7
Product Compliance	7
Description	
General	8
Intended Use	8
Log Moving/Object Handling	8
Optional Equipment and Attachments	8
Danger Zone	8
Main Component Locations	8
Product and Component Identification	
Machine	10
Engine	10
Axle	11
Gearbox	12
Operator Protective Structure	13
Safety Labels	
General	14
Safety Label Identification	14
Operator Station	
Component Locations	17
Interior Switches	
Ignition Switch	23
Multi-Purpose Switch	23
Cab Interior Light	24
Console Switches	
General	25
Road Lights	25
Rear Fog Lights	25
Hazard Warning Lights	25
Front Work Lights	26
Rear Work Lights	26



Four Wheel Drive Selector 26
Smooth Ride System (SRS) 26
Smooth Ride System with Hose Burst Check Valve 26
Beacon 26
Air-Conditioning 26
Window Heater 27
Lifting Warning System 27
Loader Quickhitch 27
High Exhaust System Temperature (HEST) 27
Kingpost Clamp 27
Rear Window Wiper 27
Bi-Directional and Hammer Mode Selector 28
Hydraulic Flow Control 28
Return To Dig Enable 28
Handheld Hydraulic Tool Circuits 28
Hammer 28
Auto Drive 28
Drinks Machine 29
Excavator/Loader Control Selector 29

Operation

Introduction
 General 31
Operating Safety
 General 32
 Worksite Safety 34
 Risk Assessment 35
Walk-Around Inspection
 General 37
Entering and Leaving the Operator Station
 General 38
Doors
 Operator Door 39
Windows
 Side Window 40
 Rear Window 40
Battery Isolator
 General 42
Before Starting the Engine
 General 43
Operator Seat
 General 45
 Suspension Seat 45
Seat Belt
 General 49
 Inertia Reel Seat Belt 49
Mirrors
 General 51
Starting the Engine
 General 52
 Warming Up 53

Immobiliser	53
Stopping and Parking	
General	57
Preparing for Travel	
General	59
Preparing for Road Travel	60
Preparing for Worksite Travel	63
Beacon	64
Safety Equipment	
Boom Lock	66
Slew Lock	67
Control Lock	68
Drive Controls	
Steering Wheel	70
Steering Column	70
Accelerator Pedal	70
Hand Throttle Control	71
Service Brake Pedal	72
Park Brake	72
Transmission Drive Lever	72
Gear Lever	75
Transmission Kickdown Switch	75
Transmission Dump Switch	76
Steer Mode Control	76
Transmission Mode	78
Instruments	
Instrument Panel	80
Speedometer	93
Getting the Machine Moving	
General	94
Slopes	
General	96
Driving on Slopes	96
Driving the Machine	
Steer Modes	97
Limited Slip Differential (LSD)	97
TorqueLock	97
Operating Levers/Pedals	
General	99
Control Layouts	99
Loader Controls	99
Excavator End Controls	111
Stabiliser Controls	133
Auxiliary Circuit Controls	136
Lifting and Loading	
General	142
Lifting (Object Handling) Kit	142
Load Charts	143
Lifting Warning System	147
Working with the Loader	
General	149



Filling the Shovel 150

Loading a Truck 151

Working with the Excavator End

 General 152

 Preparing to Use the Excavator End 152

 Lifting With the Excavator End 153

 Digging 154

 Changing the Bucket Linkage 155

 Extending Dipper 158

 Knuckle Boom 162

Heating, Ventilating and Air-Conditioning (HVAC)

 Air-Conditioning Controls 165

 Cab Heater Controls 166

 Face Level Fan 166

Extreme Cold Climate Heater

 General 167

Power Sockets

 Auxiliary Power Socket 174

Radio

 General 175

Cab Options

 Drinks Machine 176

Fire Extinguisher

 General 178

Moving a Disabled Machine

 Getting the Machine Unstuck 179

 Jump-Starting the Engine 179

 Retrieval 180

 Loader Arm (Emergency Operation) 182

 Excavator End (Emergency Operation) 183

Lifting the Machine

 General 185

Transporting the Machine

 General 189

 Loading the Machine onto the Transporting Vehicle/Trailer 189

Operating Environment

 General 191

 Operating in Low Temperatures 191

 Operating in High Temperatures 191

Refuelling

 General 193

 Low Fuel Levels 193

 Filling the Tank 193

Attachments

Working with Attachments

 Introduction 197

 Attachments for your Machine 197

 Connecting/Disconnecting Hydraulic Hoses 198

Direct-Mounted Attachments

 General 202

Tool Carrier	
General	203
Quickhitch	
General	206
Loader Quickhitch	206
Loader Quickhitch Carriage	207
Excavator End Quickhitch	208
Auxiliary Circuits	
General	221
Handheld Hydraulic Tool Circuits	221
Bi-directional Circuits	222
Shovels	
Shovel Forks	227
Street Pads	229
Side-Shift Carriage	
General	230
Hose Reel	
General	236
Work Platforms	
General	238
Hydraulic Thumb	
General	239
Hammer	
General	240
Preservation and Storage	
Cleaning	
General	243
Preparation	244
Checking For Damage	
General	245
Storage	
General	246
Put into Storage	246
During Storage	247
Take out of Storage	247
Security	
General	248
JCB Plantguard	248
Construction Equipment Security and Registration Scheme (CESAR)	248
LiveLink	248
Maintenance	
Introduction	
General	249
Owner/Operator Support	249
Service/Maintenance Agreements	250
Initial Service and Inspection	250
Obtaining Spare Parts	250
Maintenance Safety	
General	251
Fluids and Lubricants	252



Maintenance Schedules
 General 256
 How to Use the Maintenance Schedules 256
 Maintenance Intervals 256
 Pre-start Cold Checks, Service Points and Fluid Levels 256
 Functional Tests and Final Inspection 260

Maintenance Positions
 General 263
 Maintenance Position - Loader Arm Lowered 263
 Maintenance Position - Loader Arm Raised 263

Service Points
 General 266

Access Apertures
 General 268
 Engine Compartment Cover 268
 Fuel Filter Cover 271
 Front Grille 271

Tools
 General 273
 Toolbox 273

Lubrication
 General 274
 Preparation 274

Attachments
 General 275

Body and Framework
 General 278
 Kingpost 280

Loader Arm
 General 281

Excavator End
 Lubricate 282
 Wear Pads 282
 Extending Dipper 283

Stabilisers
 Wear Pads 285

Operator Station
 General 287
 Operator Protective Structure 287
 Seat 288
 Seat Belt 288
 Controls 289

Engine
 General 290
 Oil 290
 Drive Belt 294

Air Filter
 General 295

Fuel System
 General 297
 Fuel Filter 297

Engine Fuel Filter	298
Water Separator	299
Cooling System	
General	300
Coolant	300
Cooling Pack	301
Brakes	
Park Brake	302
Service Brake	303
Gearbox	
Oil	305
Steering System	
General	307
Axles	
General	308
Driveshafts	
General	310
Wheels	
General	311
Tyres	
General	313
Hydraulic System	
General	315
Services	316
Oil	316
Cylinders / Rams	317
Electrical System	
General	318
Battery	319
Battery Isolator	320
Fuses	321
Relays	324
Window Washer	
Check (Level)	328
Technical Data	
Static Dimensions	
Dimensions	329
Weights	333
Visibility Diagrams	335
Performance Dimensions	
Loader Arm Dimensions and Performance	348
Excavator End Dimensions and Performance	351
Excavator End Quickhitch Dimensions and Performance	355
Driving Performance	355
Attachment Dimensions	
Safe Working Loads	357
Excavator Bucket	359
Loader Shovels	361
Hydraulic Thumb	362
Noise Emissions	
General	364



Noise Data	364
Vibration Emissions	
General	365
Vibration Data	365
Fluids, Lubricants and Capacities	
General	369
Fuel	370
Diesel Exhaust Fluid (DEF)	373
Coolant	375
Torque Values	
General	377
Electrical System	
General	378
Bulbs	378
Fuses	378
Relays	388
Engine	
Exhaust After Treatment (EAT)	399
Hydraulic System	
General	403
Hydraulic Hose Burst Pressures	403
Wheels and Tyres	
Tyre Sizes and Pressures	405
Declaration of Conformity	
General	407
Data	407
Warranty Information	
Service Record Sheet	409

Acronyms Glossary

2WD	Two Wheel Drive
2WS	Two Wheel Steer
4WD	Four Wheel Drive
4WS	Four Wheel Steer
ARV	Auxiliary Relief Valve
AWS	All Wheel Steer
CESAR	Construction Equipment Security and Registration
DCU	Dosing Control Unit
DEF	Diesel Exhaust Fluid
ECU	Electronic Control Unit
EHTMA	European Hydraulic Tool Manufacturers Association
ESOS	Engine Shut-Off Solenoid
FEAD	Front End Accessory Drive
FOPS	Falling Object Protective Structure
GPS	Global Positioning System
HBCV	Hose Burst Check Valve
HEST	High Exhaust System Temperature
HP	High Pressure
HVAC	Heating Ventilation Air Conditioning
ISO	International Organization for Standardization
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LP	Low Pressure
LSD	Limited Slip Differential
MIL	Malfunction Indicator Lamp
MP	Medium Pressure
MRV	Main Relief Valve
NOx	Nitrogen Oxide
PIN	Product Identification Number
PPE	Personal Protective Equipment
PWM	Pulse Width Modulation
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
SWL	Safe Working Load
VGT	Variable Geometry Turbocharger
km/h	kilometers per hour
mph	miles per hour



Notes:

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:
3CX	2254521	2274521
	2442701	2451000
	2509500	
4CX	2254521	2274521
	2442701	2451000
	2509500	
5CX	2442701	2451000
	2509500	

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.

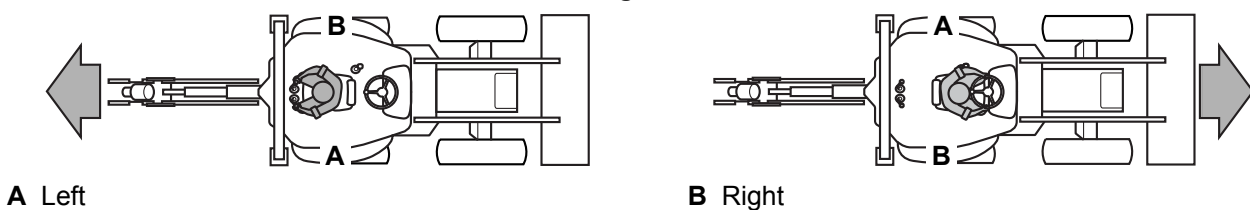
All of the optional equipment included in this manual may not be available in all territories

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.

This is so whether you are facing the loader (front) or the backhoe (rear).

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.

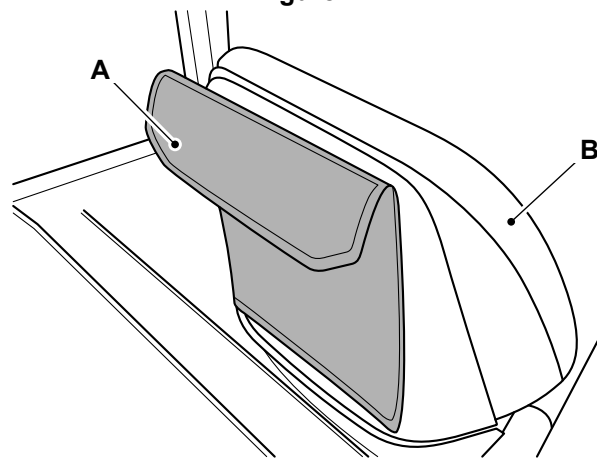
Cross References

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

The manual is located in the case attached to the back of the seat. The manual should always be returned to its case after use.

Figure 2.



A Manual location

B Seat

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, you must 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 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 symbol (shown) also helps to identify important safety messages in this manual. When you see this symbol your safety is involved, carefully read the message that follows.

Figure 3. The safety alert system symbol



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. Ensure that you receive the correct training before operating any machinery. Failing to do so will result in incorrect operation of the machine and you will be putting yourself and others at risk. 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.



Notes:

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 Excavators Limited, Lakeside Works, Rocester, Uttoxeter, United Kingdom, ST145JP

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

The Backhoe Loader is a self-propelled wheeled machine with a main frame designed to carry both front mounted equipment and rear mounted backhoe equipment with stabilisers.

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 in the loader mode (shovel use), the machine loads through forward motion. A loader work cycle normally comprises filling, elevating, transporting and discharge of material. When used in the backhoe (excavator) mode, the machine is stationary and normally digs below ground level. A backhoe work cycle normally comprises excavating digging, elevating, swinging and discharging material.

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

The machine is not intended for use in mining and quarrying applications (other than for light yard clearing operations), in demolition activities, forestry, any use underground, or in any kind of explosive atmosphere.

A backhoe loader can also be used for object or material handling/transportation if it is suitably equipped with relevant parts, systems and attachments. [Refer to: Lifting and Loading \(Page 142\)](#).

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.

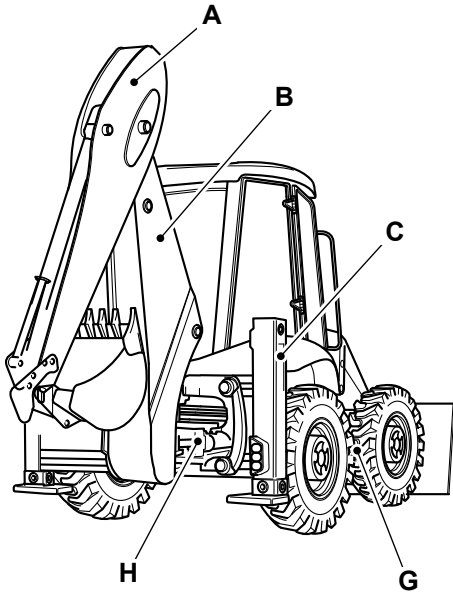
Danger Zone

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. During operation of the machine, keep all persons out of the danger zone. Persons in the danger zone could be injured.

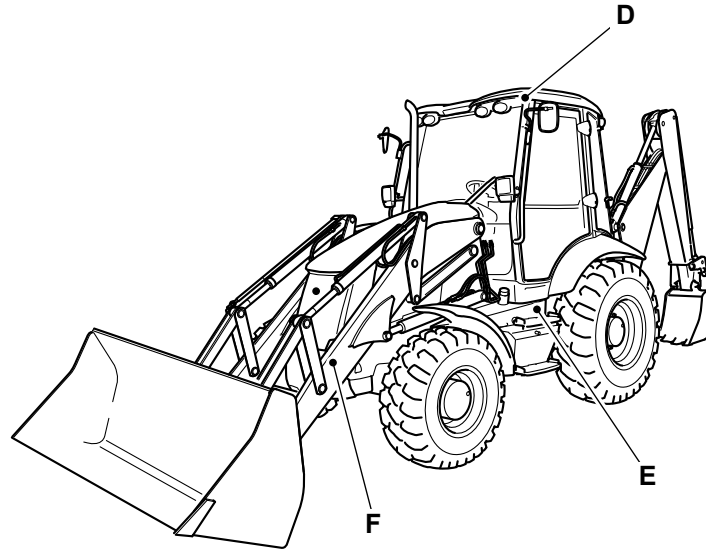
Before you do a maintenance task, make the product safe. [Refer to: Maintenance Positions \(Page 263\)](#).

Main Component Locations

Figure 4.



- A Dipper
- C Stabilisers
- E Hydraulic oil tank
- G Fuel tank



- B Boom
- D ROPS (Roll-Over Protective Structure)/FOPS (Falling Object Protective Structure) cab
- F Loader arm
- H Kingpost

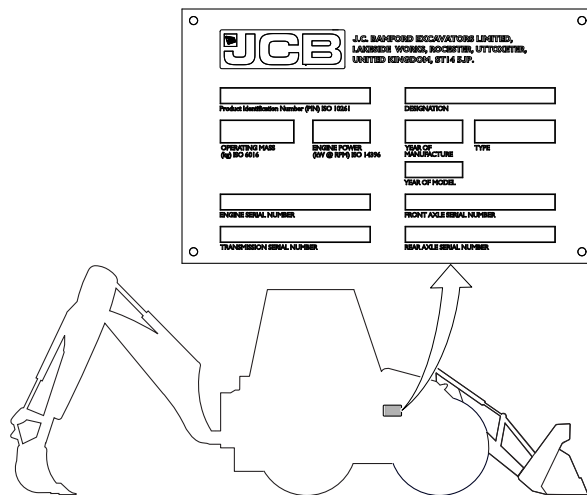
Product and Component Identification

Machine

Your machine has an identification plate. The serial numbers of the machine and its major components are marked on the 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 5.



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

Table 1. Typical PIN

JCB	3CXPC	C	12345678
-----	-------	---	----------

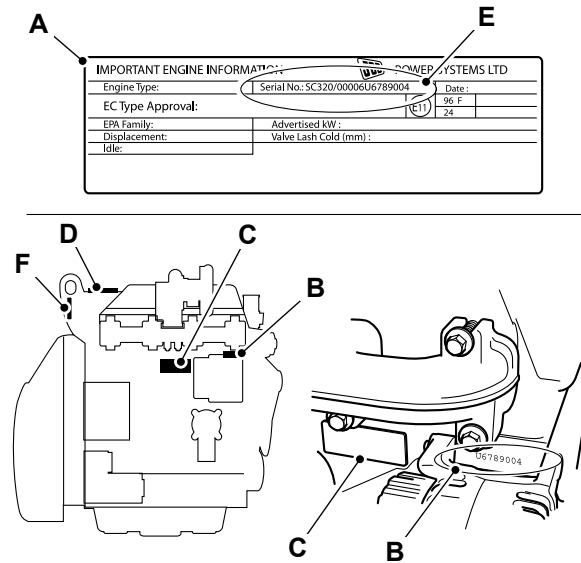
Table 2. Explanation of the PIN

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

Engine

Engine data labels are located on the cylinder block and rocker cover (if fitted). The data label contains important engine information and includes the engine identification number. Injector codes are on a label on the rocker cover.

Figure 6.



- | | |
|---|---|
| <p>A Engine data label
 C Engine data label - cylinder block
 E Engine identification number</p> | <p>B Stamp - cylinder block
 D Engine data label - rocker cover
 F Injector codes label - rocker cover</p> |
|---|---|

The data label includes the engine identification number.

Table 3. Example of the engine identification number

	SJ	320/40001	U	00001	04
Digit	1-2	3-10	11	12-16	17-18

Table 4.

Digit 1-2	Engine Type
SJ	4.4 L turbocharged and aftercooled electronic common rail fuel injection (Tier 4F) > 55 kW
SL	4.4 L turbocharged and aftercooled electronic common rail fuel injection (Tier 4F) 55 kW
FL	3 L turbocharged and aftercooled electronic common rail fuel injection (Tier 4F) > 55 kW

Table 5. Explanation of the engine identification number

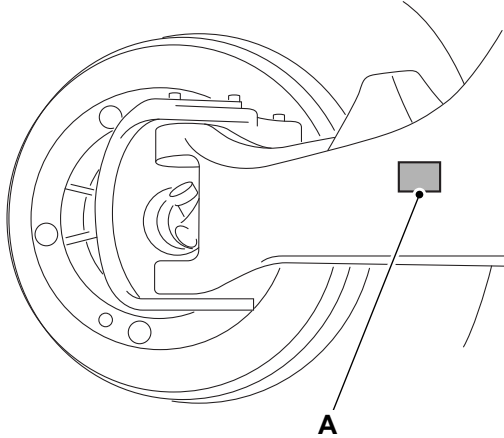
Digit	Explanation
3-10	Engine part number
11	Country of manufacture. U = United Kingdom
12-16	Engine serial number
17-18	Year of manufacture

The country of manufacturer, engine serial number and year of manufacture of the engine are also stamped on the cylinder block. Refer to Figure 6.

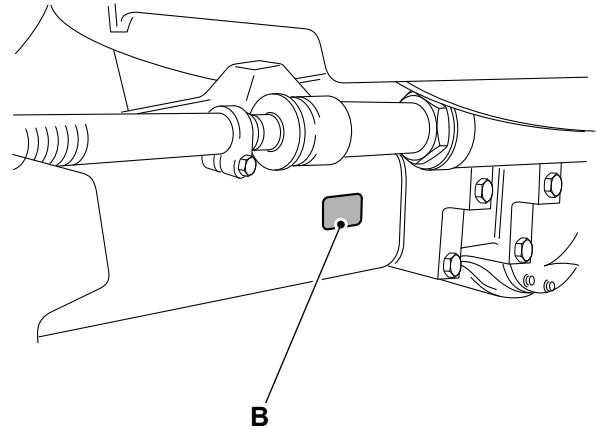
Axle

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

Figure 7.

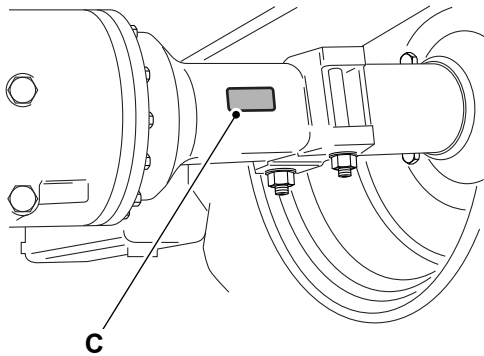


A Data plate - front axle (2WS machine)

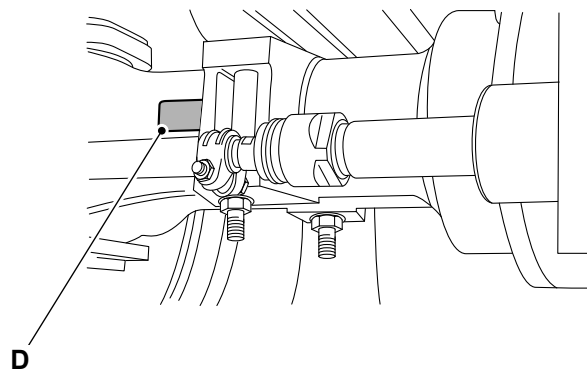


B Data plate - front axle (4WS machine)

Figure 8.



C Data plate - rear axle (2WS machine)

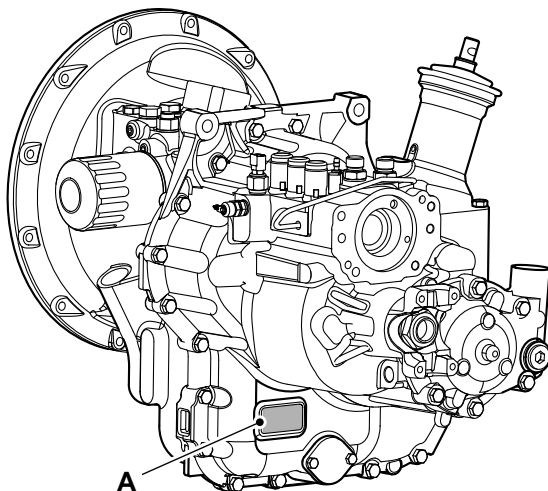


D Data plate - rear axle (4WS machine)

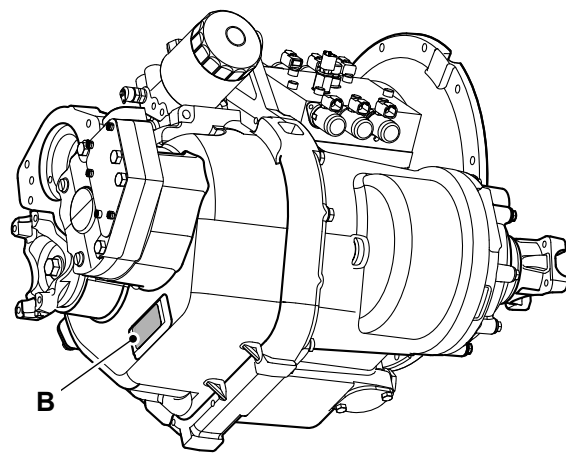
Gearbox

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

Figure 9.



A Data plate- Synchro shuttle transmission



B Data plate- Powershift transmission

Operator Protective Structure

▲ 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.

Machines built to ROPS (Roll-Over Protective Structure)/FOPS (Falling Object Protective Structure) standards have an identification label installed to the left hand side of the bulkhead. Refer to Figure 10.

The FOPS structure provides Level II impact protection against falling objects (as defined in ISO (International Organization for Standardization) 3449:2005).

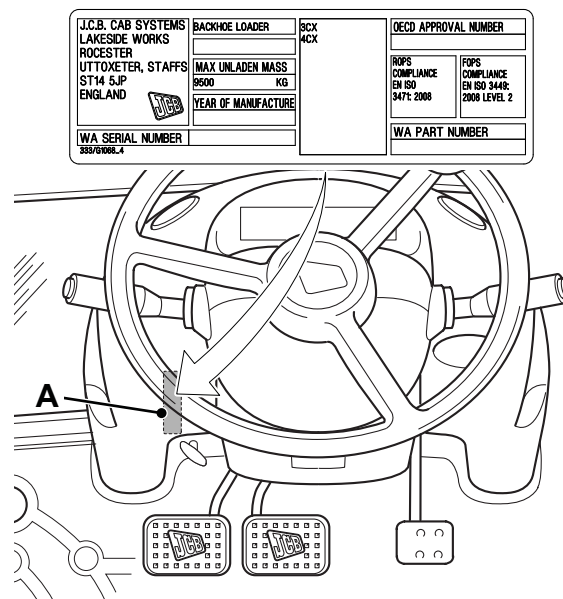
If the machine is used in any application where there is a risk of falling objects then a FOPS must be installed. For further information contact your JCB dealer.

The FOPS is installed with a data plate. 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.

Figure 10.



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.

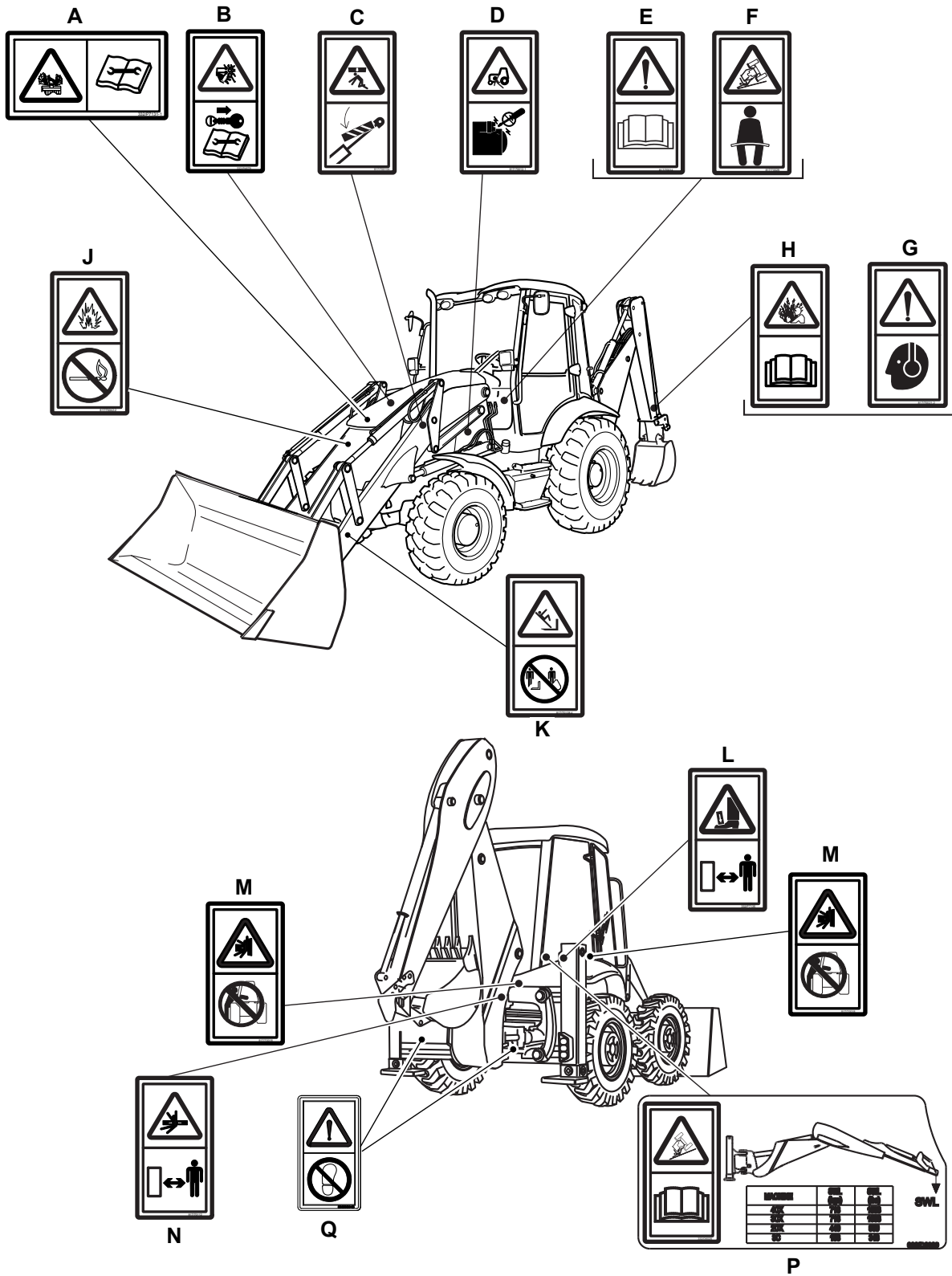
The safety labels are strategically placed around the machine to remind you of possible hazards.

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 11.



In addition to the safety labels detailed below a load chart decal 'P' may be installed on your machine. [Refer to: Load Charts \(Page 143\).](#)

Table 6. Safety Labels

Item	Part No.	Description	Qty.
A	332/P7131	Pressure hazard. Read the Service Manual.	1
B	332/P4679	Warning. Severing of hands and fingers. Keep clear of/do not reach into rotating parts. Read the Service Manual.	1
C	817/70104	Crushing of whole body. Insert the boom support device before you complete any service or maintenance work underneath the boom.	1
D	817/70012	Run over hazard. Start the engine from the operator's seat only. Do not short across the terminals.	1
E	817/70014	Warning. Read the Operator's Manual before you operate the machine.	1
F	817/70029	Warning. Crush hazard. Wear seat belt.	1
G	817/70021	Noise warning. Wear ear protection.	1
H	332/F5855	Warning. Pressure hazard. Read the Operator's Manual.	1
J	817/70042	Explosion hazard. Remove sources of ignition.	1
K	817/70108	Fall from raised attachment. Do not stand or ride on the bucket or forks.	1
L	332/P7135	Crush hazard (to feet). Keep a safe distance. The attachment may roll forward when released.	1
M	817/70018	Warning. Crushing of whole body. Do not operate the controls from outside of the machine.	2
N	817/70112	Warning. Crushing of whole body. Keep a safe distance.	1
P	332/D6029	Stability hazard. Make sure that the load is within the capability of the machine. Refer to the operator's manual.	1
Q	332/B2045	Warning. Do not use as a step.	2

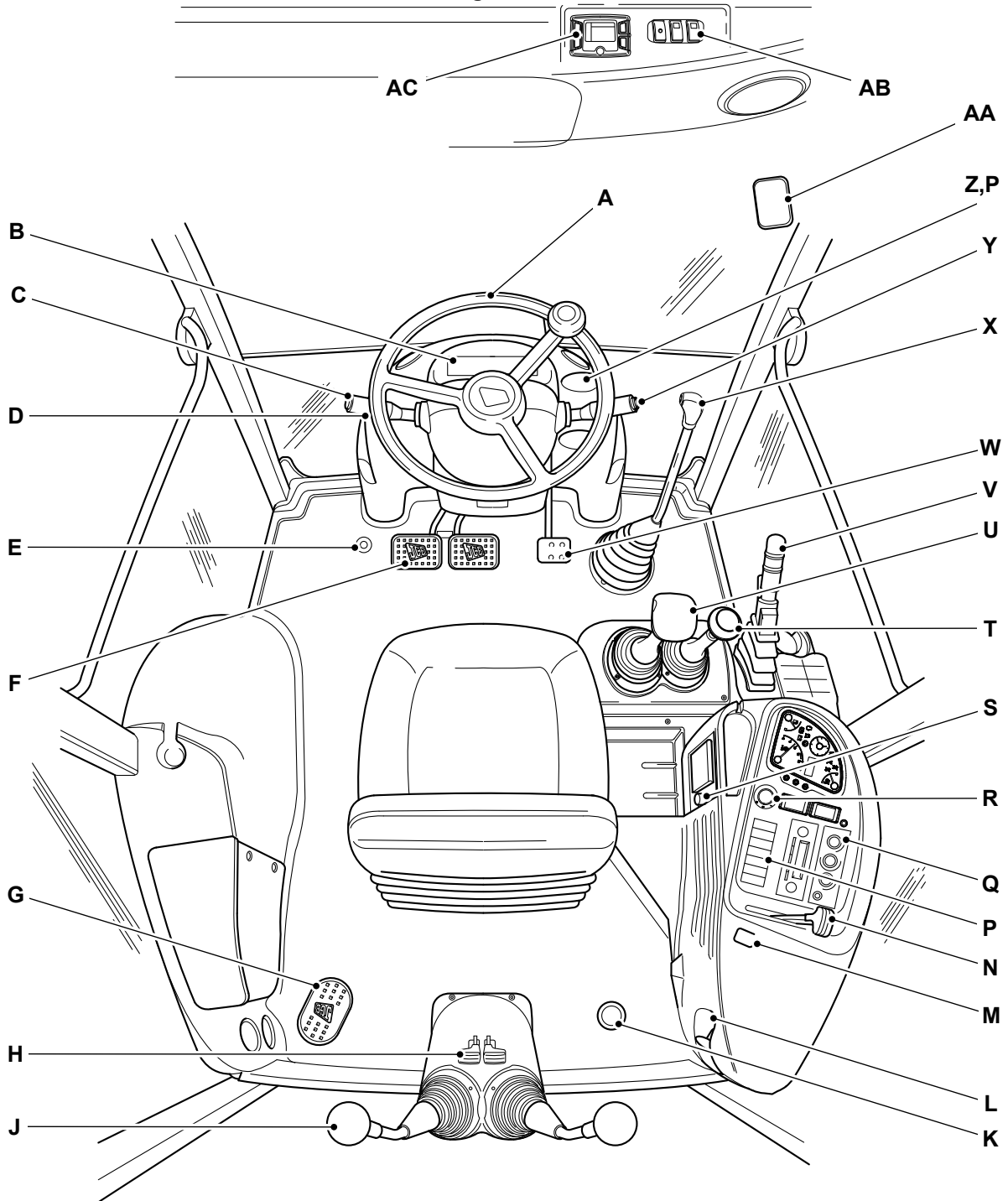
Operator Station

Component Locations

For: Manual Controls Page 17
 For: Easy Controls Page 19
 For: Advanced Easy Controls Page 21

(For: Manual Controls)

Figure 12.



A Steering wheel [Refer to: Steering Wheel \(Page 70\).](#)

B Instrument panel [Refer to: Instruments \(Page 80\).](#)

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