Contents **Page No.**

Acronyms Glossary vii

Introduction
About this Manual
Model and Serial Number 1
Using the Manual 1
Left-Hand Side, Right-Hand Side 1
Cab/Canopy 2
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 9
Product and Component Identification
Machine 10
Engine 10
Operator Protective Structure 11
Safety Labels
General 13
Safety Label Identification 13
Operator Station
Component Locations 17
Interior Switches
Ignition Switch 18
Cab Interior Light 18
Control Pattern Selector 19
Console Switches
General 20
Work Lights 20
Beacon 20
Overload Warning System 20
Excavator End Quickhitch 20
Controls Isolation 21
Window Wipers 21
Auxiliary Hydraulic Circuit 21

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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 2. The safety alert system symbol



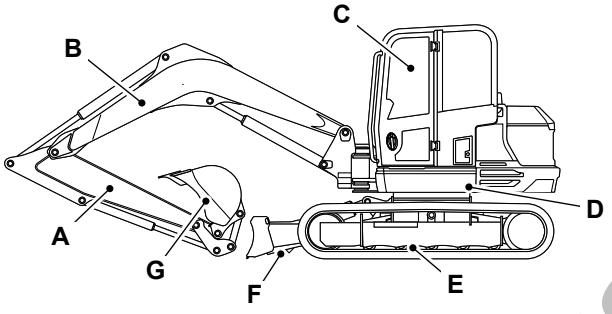
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Before you do a maintenance task, make the product safe.

Main Component Locations

Figure 3.



A Dipper (part of the excavator arm)
B Boom (part of the excavator arm)
C Cab (contains the operator station)
D Upper structure
E Undercarriage
F Dozer blade
G Bucket

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Hydraulic Active Mode Variants

The hydraulic active mode includes the following details as shown.

Figure 52.



A Auto warm hydraulics active mode (high flow single acting aux return circuit only)
B Hydraulics active mode
C Hydraulics inactive mode

Main Screen Auto Warm Active

This symbol will blink on and off to allow the operator to see the coolant and hydraulic temps during an active auto warm state.

Figure 53.



Errors

Main Screen with Major Warning

If a major warning is present the instrument panel will display the warning on the right hand side in red (regardless of what screen is selected). The operator can acknowledge the fault so that the warning buzzer is silenced by pressing the centre button on the instrument display panel. The warning symbol will stay illuminated on the screen. The next fault will appear, once all faults are acknowledged it will continuously scroll at 2 s intervals until all the faults are resolved. If you do not acknowledge the faults, they will continue to scroll and sound the buzzer.

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Item	Description	Length
M	Transport height with standard dipper	2,706 mm
N	Track height	650 mm
P	Counterweight clearance	762 mm

Weights

For: 85Z-1 [T2], 85Z-1 [T4F] ..... Page 181
For: 86C-1 [T2], 86C-1 [T4F] ..... Page 181

(For: 85Z-1 [T2], 85Z-1 [T4F])

Monoboom

Operating weight to ISO (International Organization for Standardization) 6016 including cab, rubber tracks, standard dipper 2,000 mm, 450 mm bucket, full tanks, and a 75 kg operator.

Shipping weight to ISO 6016 is mass of the base machine without an operator, with fuel level at 10 % of tank capacity.

Table 14.

Description	kg
Operating weight (450 mm rubber tracks)	8,300 kg
Shipping weight (450 mm rubber tracks)	8,132 kg
Machine with FOGS (Falling Object Guard System) guard - stage 1	14 kg
Machine with FOGS guard - stage 2	97 kg
Machine with steel tracks (450 mm)	184 kg
Machine with steel tracks (600 mm)	367 kg
Machine with bridgestone geogrips	134 kg
Machine with wide dozer (2,470 mm)	18 kg
Machine with narrow dozer (2,200 mm)	-5 kg
Ground bearing pressure (450 mm rubber tracks)	0.4 kg/cm2
Ground bearing pressure (450 mm steel tracks)	0.4 kg/cm2
Ground bearing pressure (600 mm steel tracks)	0.31 kg/cm2
Machine with FOGS guard - stage 1 HVAC (Heating Ventilation Air Conditioning)	49 kg
Machine with four way dozer	217 kg
Machine with Quickhitch	95 kg

(For: 86C-1 [T2], 86C-1 [T4F])

Monoboom

Operating weight to ISO 6016 including cab, rubber tracks, standard dipper 2,100 mm, 450 mm bucket, full tanks, and a 75 kg operator.

Shipping weight to ISO 6016 is mass of the base machine without an operator, with fuel level at 10 % of tank capacity.

Table 15.

Description	kg
Operating weight (450 mm rubber tracks)	8,600 kg
Shipping weight (450 mm rubber tracks)	8,432 kg
Machine with FOGS guard - stage 1	14 kg

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Maintenance Schedules

General

⚠ **WARNING** Maintenance must be done only by suitably qualified and competent persons.

Before doing any maintenance make sure the machine is safe, it must be correctly parked on solid, level ground.

To prevent anyone starting the engine, remove the ignition key. Disconnect the battery (by means of the battery isolator if installed) when you are not using electrical power. If you do not take these precautions you could be killed or injured.

A badly maintained machine is a danger to the operator and the people working around the operator. Make sure that the regular maintenance and lubrication tasks listed in the service schedules are done to keep the machine in a safe and efficient working condition.

To ensure the correct functioning of the engine and emissions control system all operation and maintenance must be conducted in accordance with the instructions in this manual. Incorrect operation, maintenance or repair of the engine and emissions control system may lead to reduced product life, loss of performance or malfunctions. It is the machine owner's responsibility to ensure maintenance is conducted properly in accordance with the requirements in this manual.

Apart from the daily tasks, the schedules are based on the machine running hours. Keep a regular check on the hourmeter readings to correctly gauge the service intervals. When there is no hourmeter installed, use the calendar equivalents to determine the service intervals.

Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are corrected immediately.

More frequent checks of engine components than the engine manufacturer recommends do not invalidate emissions warranty.

How to Use the Maintenance Schedules

The schedules show the service tasks which must be done and their intervals.

The services must be done at either the hourly interval or the calendar equivalent, whichever occurs first.

The intervals given in the schedules must not be exceeded. If the machine is operated under severe conditions (high temperature, dust, water, etc.) shorten the intervals.

Table 7.

○	Service task can be completed by a competent operator. Details of how to complete the service task are given in the Operator's Manual.
□	We recommend that a Service Engineer completes the service task. Details of how to complete the service task are given in the Service Manual.

Maintenance Intervals

Table 8.

Interval (h)	Calendar Equivalent
10	Daily
50	Weekly
500	Six months
1000	Yearly
2000	Two years

Pre-start Cold Checks, Service Points and Fluid Levels

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Entering and Leaving the Operator Station

General

⚠ **WARNING** For safety reasons, machines installed with single access canopies from new must not have the barrier removed. The machine must always be entered/exited with the left hand isolator raised via the left hand side.

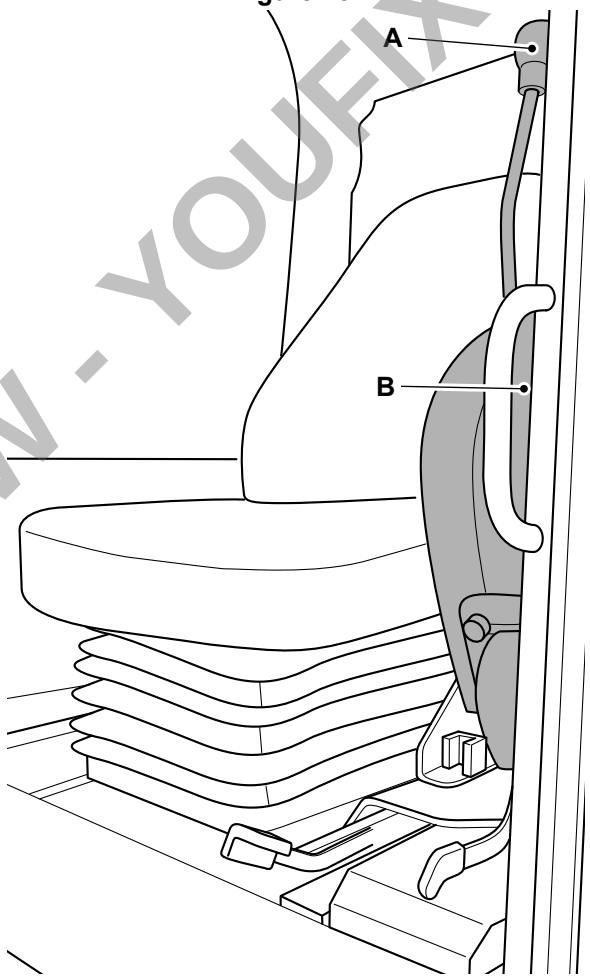
WARNING Do not enter or exit the cab unless the controls isolation lever is in the fully raised position.

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

Entering the Cab

1. Open the cab door and if necessary attach it in the open position.
   Refer to: Operator Door (Page 33).
2. Check that the left controls console is raised. When the left controls console is in the raised position the excavator, track and dozer controls cannot be operated.
   Refer to: Control Lock (Page 57).

Figure 15.



A Handle

B Left controls console

3. Hold the two handrails (one each side of the cab entrance), use the under carriage step to climb to the cab step.

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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.

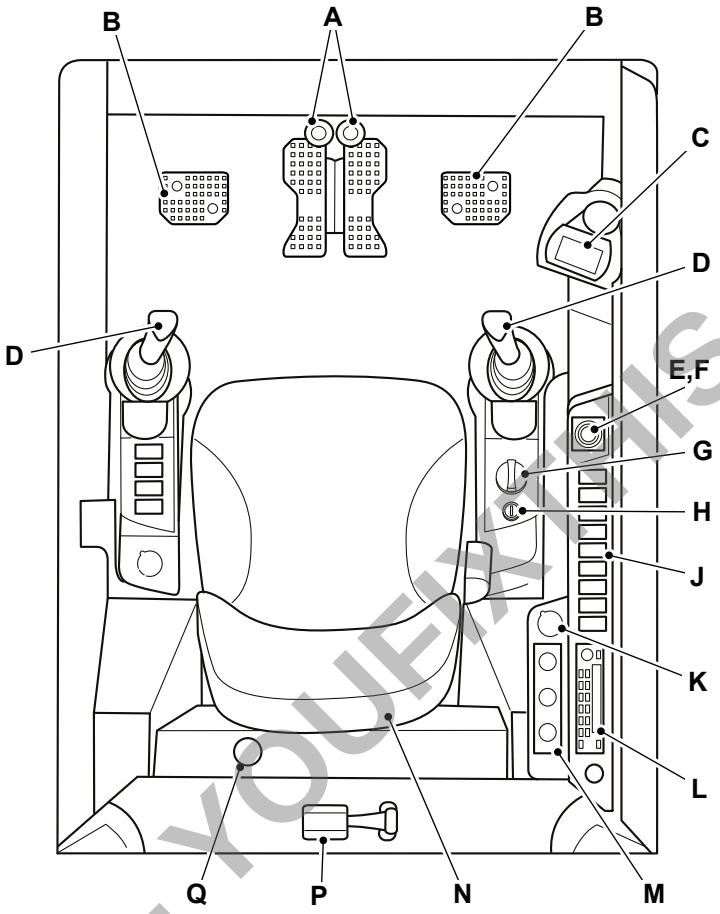
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Operator Station

Component Locations

Figure 11.



A Track controls Refer to: Track Controls (Page 59).
B Swing control pedal Refer to: Excavator End Controls (Page 73).
C Instrument panel Refer to: Instruments (Page 60).
D Excavator controls Refer to: Excavator End Controls (Page 73).
E Dozer blade control lever Refer to: Dozer Blade Controls (Page 76).
F Two-speed tracking switch Refer to: Track Controls (Page 59).
G Hand throttle control Refer to: Hand Throttle Control (Page 59).
H Ignition key switch Refer to: Ignition Switch (Page 18).
J Switch console Refer to: Console Switches (Page 20).
K Auxiliary power socket Refer to: Power Sockets (Page 89).
L Entertainment system
M HVAC (Heating Ventilation Air Conditioning) controls Refer to: Heating, Ventilating and Air-Conditioning (HVAC) (Page 87).
N Operator seat Refer to: Operator Seat (Page 41).
P Glass hammer Refer to: Emergency Exit (Page 31).
Q Fire extinguisher (option)Refer to: Fire Extinguisher (Page 90).
R TAB (Triple Articulated Boom) pedalRefer to: Excavator End Controls (Page 73).

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Attachments
Working with Attachments

Introduction

Attachments

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

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

Metal Splinters

You can be injured by flying metal splinters when driving metal pins in or out. Use a soft faced hammer or copper drift to remove and install metal pins. Always wear personal protective equipment.

Attachments

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

Some attachments are supplied with the instructions on the safety, installation, removal, operation and maintenance procedures. Read and fully understand these procedures before the attachment is installed, used and serviced. If there is anything you do not understand, ask your JCB dealer.

Before you use an attachment, make sure you understand how the attachment will affect the operational safety.

When an attachment is installed, there may be changes in the machines centre of gravity or overall dimensions. These change can effect for example, the machine stability, the gradients on which it is safe to operate or the safe distance from power lines.

Practice with an attachment off the job before you work with it for the first time.

A JCB attachment is designed and manufactured specifically to suit the machines hydraulic system, mounting components and safe load requirements.

An attachment which is not designed for use with the machine can cause damage and create a safety hazard for which JCB cannot be held responsible. Also the machines warranty and any other legislative compliance can be affected by the use of non JCB approved attachments.

If your machine needs the hydraulic system adapting to use an auxiliary attachment, you must consult your JCB dealer. Only suitably qualified personnel must re-route the hydraulic hoses.

All optional attachments must be used within the limits for the machine and will have limits on their operation, for example, the lifting capacity, speeds, hydraulic flow rates. Always check the instruction supplied with the attachment, or if in doubt check with a JCB Dealer for advice. Some specification limits may also be shown on the data/rating plate on the attachment.

This section of the Operator's Manual includes general information on the operation of the attachment and the procedures for the installation and removal of the attachment.

Attachments for your Machine

⚠ **CAUTION** Operation of this machine with an earth drill or breaker attached will alter machine stability.

Attachments will help increase the productivity of your machine, for more information contact your JCB dealer.

Remember, do not operate an attachment until you have read and fully understand the attachment operating instructions.

Do not operate or work with attachments until the machine hydraulic oil has reached its normal working temperature.

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Transporting the Machine

General

⚠ **WARNING** The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachments or parts that may move during transit must be adequately secured.

WARNING Make sure that the ramp incline does not exceed the machine's operational limits.

CAUTION Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tracks. Make sure the machine will not foul on the ramp angle.

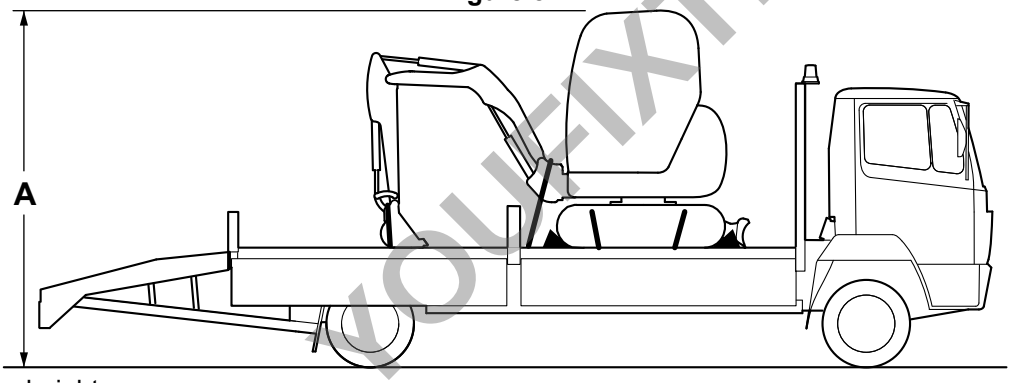
Before transporting the machine make sure you will be obeying the local rules and laws regarding machine transportation of all the areas that the machine will be carried through.

Check the condition of the transporting vehicle before loading the machine on to its trailer.

Check the Condition of the Transporting Vehicle

1. Make sure that the transporting vehicle is suitable for the dimensions and weight of your machine. Measure the clearance height. Make sure that the truck driver knows the clearance height before he drives away.

Figure 84.



A Clearance height

2. Remove all loose dirt that may otherwise come off and obstruct the highway and damage other vehicles.
3. Check the operation of the park brake.
4. Check the trailer bodywork for signs of damage.
5. Check the tyre pressures are correct (consult the manufacturer's manual).
6. Check the trailer lights are working and are the correct voltage for the towing vehicle (consult the manufacturer's manual).
7. Check the breakaway cable is serviceable.

Loading the Machine onto the Transporting Vehicle/Trailer

⚠ **CAUTION** The machine must be securely tied down to the transport vehicle to prevent lateral movement, fore-and-aft movement, and slewing of the superstructure. Failure to do so could cause injury to yourself or others.

1. Position the transporting vehicle on solid, level ground.
2. Apply the park brakes and lower any stability jacks.
3. Attach the loading ramps on to the transporter correctly.
4. Align the machine with the loading ramps, position the dozer blade to the front and fully raised.

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Notes:

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