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.

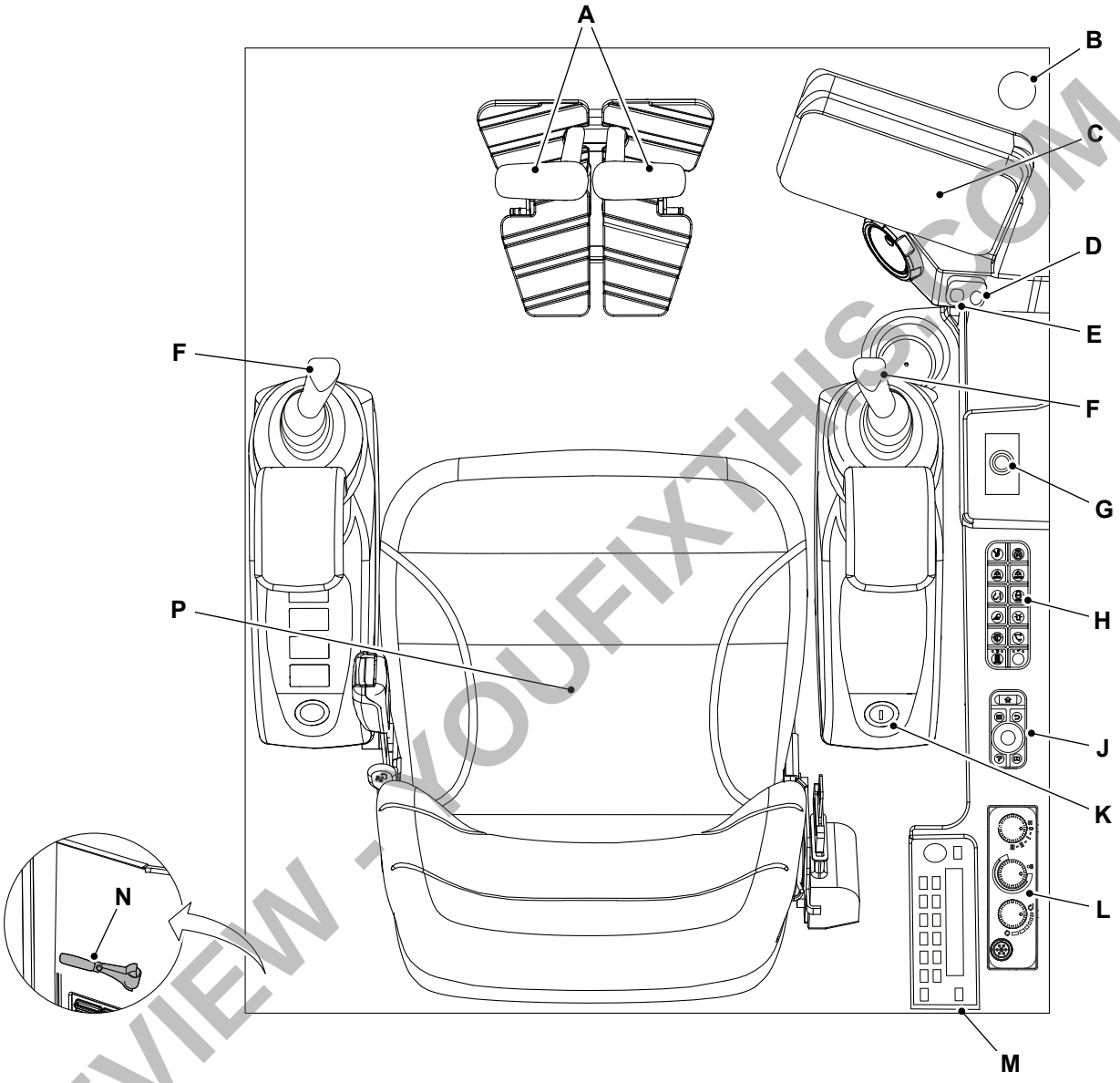
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Operator Station

Component Locations

Figure 11.



A Track controls Refer to: Operation > Drive Controls > Track Controls (Page 59).
B Fire extinguisher (option)Refer to: Operation > Fire Extinguisher (Page 92).
C Instrument panel Refer to: Operation > Instruments > Instrument Panel (Page 60).
D Auxiliary power socket Refer to: Operation > Power Sockets > Auxiliary Power Socket (Page 89).
E USB port
F Excavator controlsRefer to: Operation > Operating Levers/Pedals > Excavator Arm Controls (Page 73).
G Dozer blade control lever Refer to: Operation > Operating Levers/Pedals > Dozer Blade Controls (Page 76).
H Switch panelRefer to: About the Product > Console Switches > General (Page 19).
J Rotary switch panelRefer to: Operation > Instruments > Instrument Panel (Page 60).
K Ignition key switch Refer to: About the Product > Interior Switches > Ignition Switch (Page 21).
L HVAC (Heating Ventilation Air Conditioning) controls Refer to: Operation > Heating,
M Radio (option)

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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 will have limits on their operation for example, the lifting capacity, speeds, hydraulic flow rates. Always check the instructions supplied with the attachment or in the Specification section of this manual. 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.

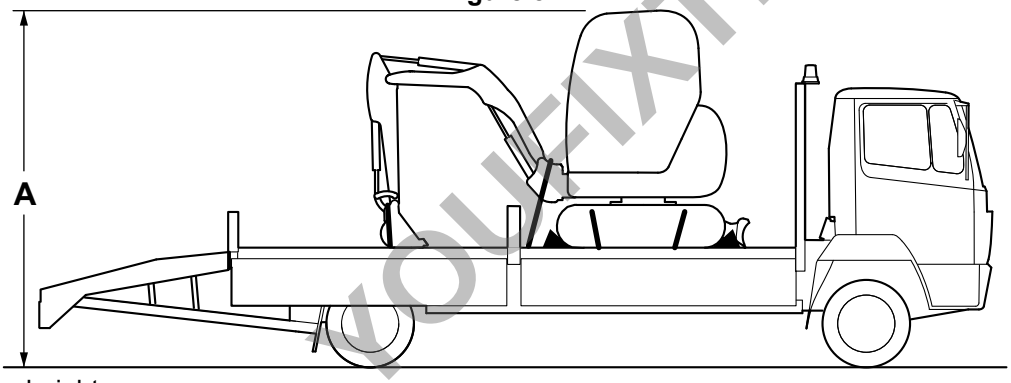
Before transporting the machine make sure you will be obeying the local rules and laws regarding machine transportation of all the areas that the machine will be carried through.

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 87.



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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2. Stop the engine and let it cool for at least one hour. Do not try to clean any part of the engine while it is running.
3. Make sure that all of the electrical connectors are correctly coupled. If the connectors are open, attach the correct caps or seal with water proof tape.

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Technical Data
Static Dimensions

Dimensions

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Figure 142.

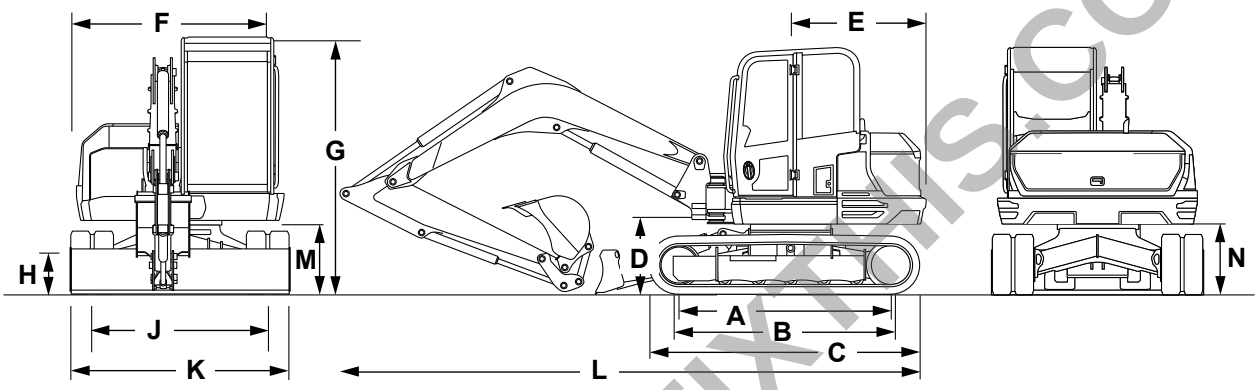


Table 16.

Item	Description	Length
A	Sprocket idler centres - rubber	1,985mm
B	Track length on ground	1,985mm
C	Undercarriage overall length - rubber	2,490mm
	Undercarriage overall length - steel	2,490mm
D	Kingpost clearance	631mm
E	Tailswing radius	1,000mm
F	Overall width of superstructure	1,845mm
G	Height over cab	2,551mm
H	Ground clearance	300mm
J	Track gauge	1,550mm
K	Width over tracks/Rubber/Steel/Geo-Grip	1,950mm
	Width over tracks/Wide steel (option)	2,100mm
L	Transport length - standard dipper	5,271mm
M	Track height	560mm
N	Counterweight clearance	618mm

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Walk-Around Inspection

General

⚠ **WARNING** Walking or working under a raised boom and dipper is hazardous. You could be crushed by the boom and dipper or get caught in the linkages. Lower the boom and dipper before doing these checks.

The following checks must be made each time you return to the machine after leaving it for any period of time. We advise you also to stop the machine occasionally during long work sessions and do the checks again.

All these checks concern the serviceability of the machine. Some concern your safety. Get your service engineer to check and correct any defects.

1. Check for cleanliness.
   1.1. Clean the windows, light lenses and the rear view mirrors (where applicable).
   1.2. Remove dirt and debris, especially from around the linkages, rams, pivot points and radiator.
   1.3. Make sure the cab step and handrails are clean and dry.
   1.4. Clean all of the safety and instructional labels. Replace any label that is missing or cannot be read.
2. Check for damage.
   2.1. Examine the machine generally for damaged and missing parts.
   2.2. Make sure that the attachment is correctly attached and in good condition.
   2.3. Make sure that all of the pivot pins are correctly installed.
   2.4. Examine the windows for cracks and damage. Glass splinters can blind.
   2.5. Check for oil, fuel and coolant leakages below the machine.

   WARNING! *You could be killed or injured with damaged tracks. Do not use the machine with damaged or excessively worn tracks.*
3. Check the tracks.
   Refer to: Maintenance > Tracks (Page 166).
4. Make sure that all of the filler caps are installed correctly.
5. Make sure that all of the access panels are closed correctly.
   Refer to: Maintenance > Access Apertures (Page 147).
6. If the filler caps and access panels are installed with locks, we recommend that you lock them to prevent theft or tampering.

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Console Switches

General

Figure 12.

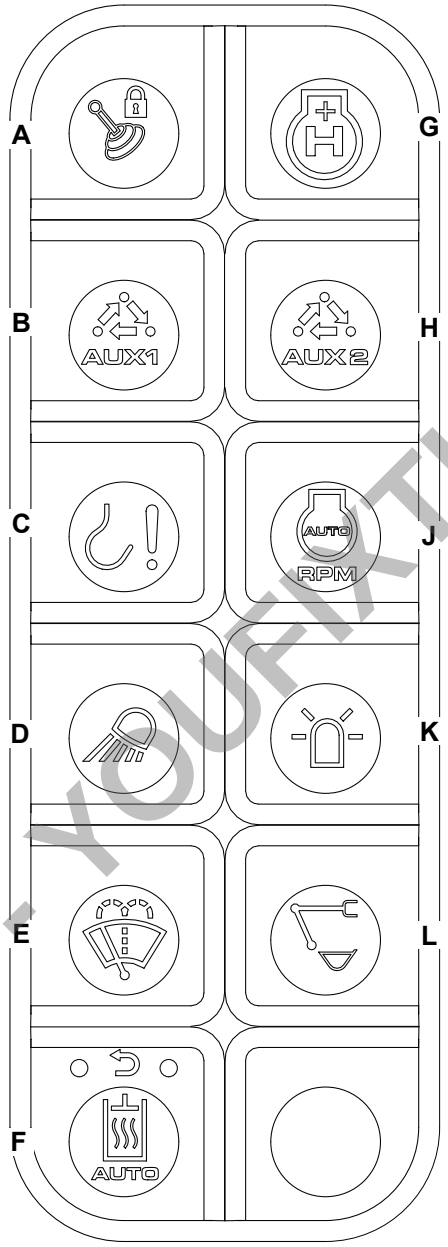


Table 4.

A	Control isolation solenoid on/ off switch	LED (Light Emitting Diode) illumination: Hydraulics active
B	Aux 1 (high flow) selection switch	Mode: Single acting, Double acting system 1 or 2. No LED illumination.
C	Lift overload switch	LED illumination: Buzzer silenced
D	Worklights on/off switch	LED illumination: 1= Front on, 2= Rear on
E	Wiper/washer on	Push to change wiper function (Intermittent /on/off). Hold to operate washer. LED Illumination: 1= Intermittent wiper, 2= On wiper, 1 & 2 = Washer active
F	Auto-hydraulic warming switch	LED illumination: Auto warming on
G	H+ mode selection switch	LED illumination: H+ Mode active

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Quickhitch

Excavator Arm Quickhitch

General

⚠ **WARNING** Always install the Quickhitch latch hook locking pin. Failure to install the pin will result in possible failure of the latching mechanism. Such a failure would result in the sudden release of an attachment from the machine and you or others could be killed or seriously injured.

WARNING The attachment will roll forward when released. Stand clear and to one side when releasing the attachment.

WARNING The Quickhitch sequence must not be entered unless a constant tone buzzer is heard. This can be identified on start up of the machine. Check the constant tone buzzer operation daily.

CAUTION When the Quickhitch is installed and its attachment attached, there is a danger of the attachment hitting the machine. Operate the boom and dipper carefully when the Quickhitch and its attachment are attached.

CAUTION When the Quickhitch is attached to the machine, allowance must be made for the weight of the Quickhitch on the rated operating load. The mass of the Quickhitch is stamped on the data plate.

The Excavator Quickhitch, which is attached to the dipper enables the fast removal and installation of the bucket (and other attachments).

There are two types of Quickhitch available - manual and hydraulic.

In hydraulic Quickhitch, there are two system available:

- High pressure
- Low pressure

Compatibility of the Quickhitch must be checked with Quickhitch manufacturer. For the Quickhitch system pressure figures, Refer to: Technical Data > Hydraulic System (Page 197).

Put the Quickhitch attachments on solid, level ground to make the installation procedure safe and easier.

Installation

This operation is easier done by two people, one person to operate the controls and one to line up the pivots.

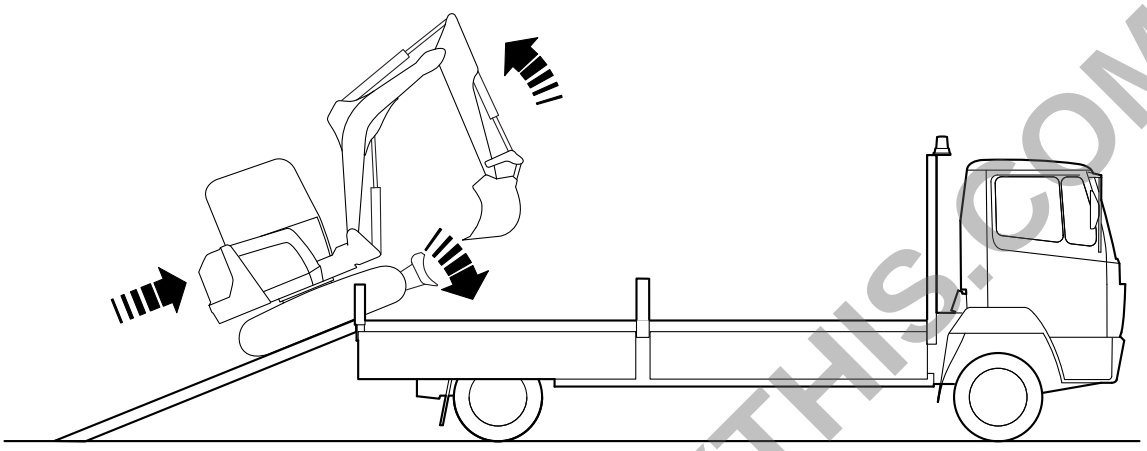
1. Before the Quickhitch is installed, make sure that the tipping lever locking bolt assembly is attached with the nut and any lifting shackle is removed.
2. Put the Quickhitch on solid, level ground. Use the safe and correct lifting equipment to move the Quickhitch.
3. Move the machine so that the dipper arm and Quickhitch are correctly aligned as shown. Refer to Figure 101.
4. Engage the dipper:
   4.1. Operate the controls to line up the hole in the dipper arm with the holes in the Quickhitch.
   4.2. Install the pivot pin and secure it with the nut and bolt.
5. Engage the bucket link:

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5. Slightly extend the boom and dipper for stability.
6. With the machine in low speed mode, track forward onto the ramp slowly and smoothly. Make sure the bucket will not contact the transporter ramps when loading the machine.

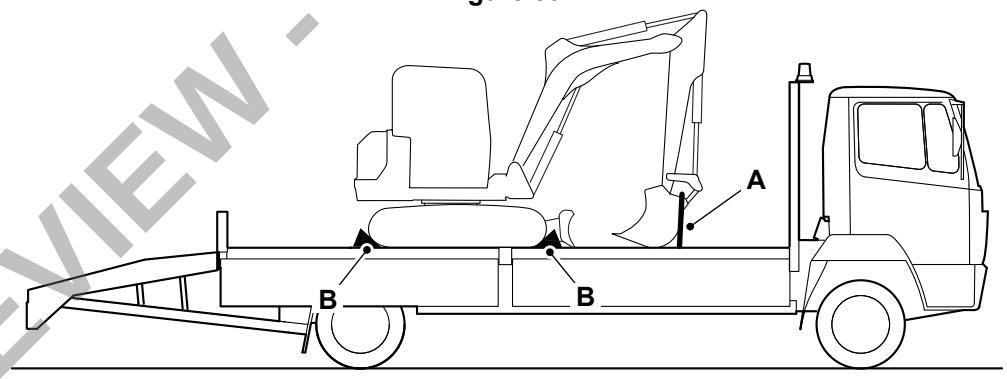
Figure 88.



7. Slowly drive the machine to the top of the ramps.
8. Lower the boom until the bucket contacts the transporter deck.
9. Slowly drive forward. As the tracks begin to clear the ramps, gently raise the boom allowing the machine to rock forward onto the transporter bed.
10. Slew the cab.

    Angle: 180°
11. Lower the bucket onto the transporter bed.

Figure 89.



A Securing strap (bucket) **B** Skids

12. Crowd the bucket. Position the dipper vertically and lower the boom until the bucket rests on a wooden block on the trailer bed.
13. Stop the engine.
14. Position a strap of suitable breaking strain over the bucket and secure to the trailer shackles.
15. Place skids under each track at the front and rear to prevent movement of the machine in the fore and aft direction.
16. Attach straps of suitable breaking strain to the tie down points. The tie down points are identified with a decal. Attach the straps to the trailer shackles to prevent lateral movement of the machine.

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Pre-start Cold Checks, Service Points and Fluid Levels

Table 14.

Component	Task	10	50	500	1,000	2,000
Engine						
Oil level	Check	O	O	□	□	□
Oil and Filter	Replace			□	□	□
Air Cleaner (Dusty Condition Only)	Check and Clean		O	□	□	□
Air Cleaner Dust Valve (Dusty Condition Only)	Check and Clean		O	□	□	□
Air Cleaner Element (Dusty Conditions only)	Replace			□	□	□
Air Cleaner Outer Element	Replace				□	□
Air Cleaner Inner Element	Replace					□
Air Cleaner Hose Security	Check		O	□	□	□
Air Filter Dust Valve	Check and Clean			□	□	□
Fuel Injectors[1]	Clean and Test					□
Coolant Quality/Level	Check	O	O	□	□	□
Coolant	Replace					□
Fuel Sedimenter	Drain and Clean		O	□	□	□
Fuel Filter/Sedimenter Element	Replace			□	□	□
Primary Fuel Filter	Check			□	□	□
Fuel Pre Filter	Check			□	□	□
Fan Belt Tension/Condition	Check and Adjust (if required)		O	□	□	□
Valve Clearances[1]	Check and Adjust (if required)				□	□
Cylinder Head Bolts for Tightness	Check				□	□
Engine Mounting Bolts for Tightness	Check			□	□	□
Exhaust System Security	Check			□	□	□
Radiator	Clean and Check	O	O	□	□	□
Transmission						
Security of Mounting Bolts and Nuts						
Track Wheel Motor to Undercarriage Bolts	Check			□	□	□
Drive Sprocket Bolts	Check			□	□	□
Slew Gearbox Bolts	Check				□	□
Track Gearbox Oil	Replace			□	□	□
Hydraulics						
Oil Level	Check	O	O	□	□	□
Oil	Replace					□
Rams - Chrome Condition	Check		O	□	□	□
Hoses and Pipework - Damage/Leaks	Check		O	□	□	□

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Performance Dimensions

Excavator Arm Dimensions and Performance

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Digging

Figure 144.

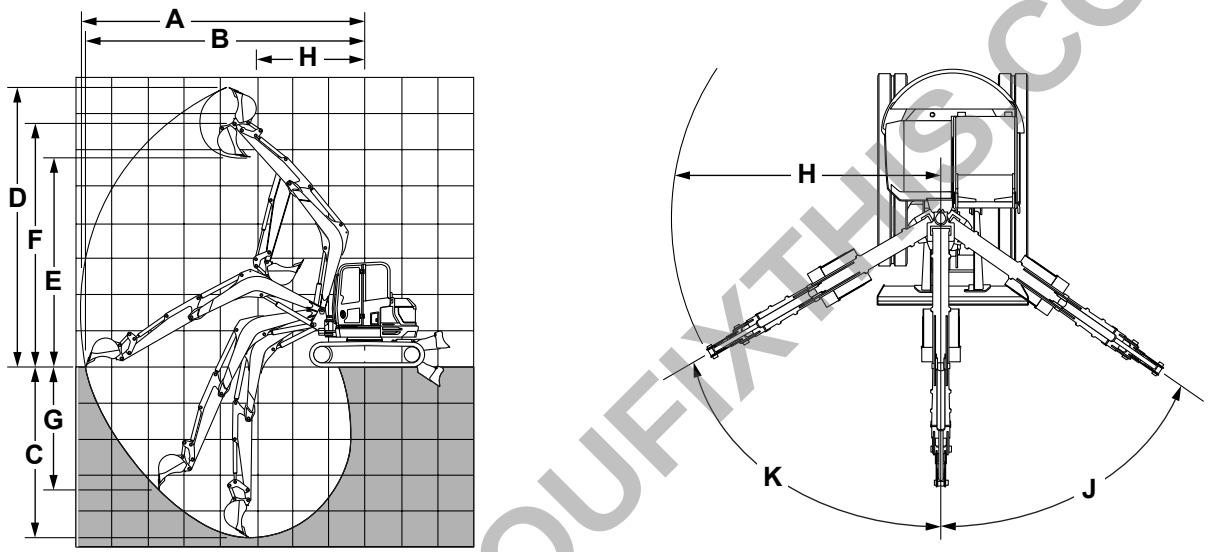


Table 20.

Item	Description	
Boom length		2,866mm
Dipper length		1,570mm
A	Maximum digging reach	6,119mm
B	Maximum digging reach on ground	5,995mm
C	Maximum digging depth - dozer up	3,606mm
	Maximum digging depth - dozer down	3,843mm
D	Maximum digging height	5,664mm
E	Maximum dump / load-over height	4,274mm
F	Maximum height to dipper nose pivot pin	4,970mm
G	Maximum vertical wallcut depth	2,052mm
H	Minimum front swing radius (no offset)	2,641mm
	Minimum front swing radius (fully offset)	2,160mm
J	Boom swing left	70°
K	Boom swing right	55°
-	Bucket rotation	181.1°
-	Dipper rotation	121.1°
-	Bucket tearout (power position)	42kN
-	Dipper tearout	29kN
-	Slew speed	8.3 RPM (Revolutions Per Minute)

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