OPERATOR'S MANUAL



EXCAVATOR

JS115, JS130, JS145, JS160, JS180, JS190, JS200, JS210, JS220, JS235

EN - 9821/9950 ISSUE 6 - 03/2018

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE

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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



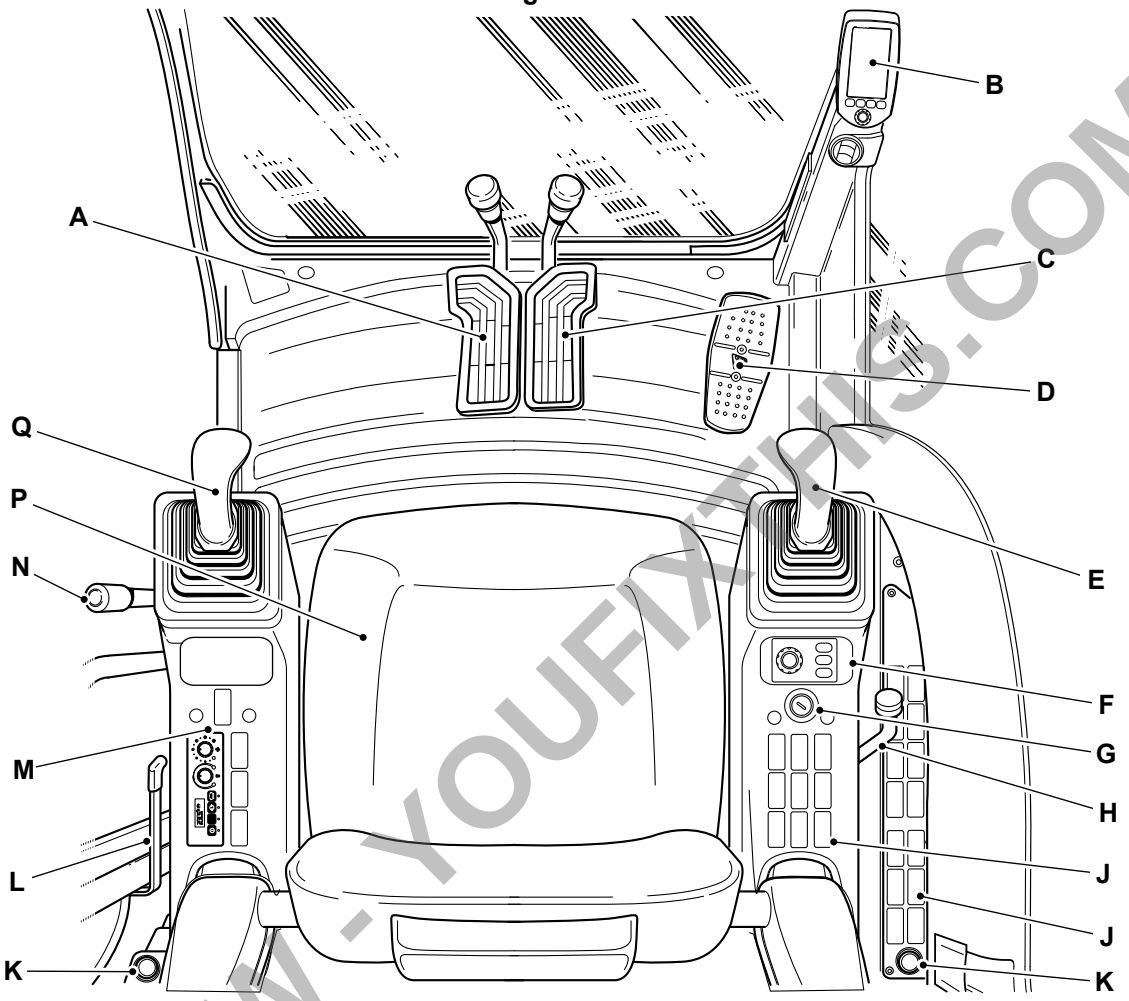
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Operator Station

Component Locations

Figure 11.



A Left hand track control, Refer to: Track Controls (Page 67).
B DECU (Display Electronic Control Unit), Refer to: Instrument Panel (Page 71).
C Right hand track control, Refer to: Track Controls (Page 67).
D Optional circuit pedal, Refer to: Auxiliary Circuit Controls (Page 111).
E Right joystick, Refer to: Excavator End Controls (Page 103).
F Machine power band controller, Refer to: General (Page 70).
G Ignition switch, Refer to: Ignition Switch (Page 19).
H Dozer lever,
J Right switch console, Refer to: Console Switches (Page 21).
K 12V auxiliary power socket, Refer to: Auxiliary Power Socket (Page 133).
L Door lever, Refer to: Operator Door (Page 38).
M Left switch console, Refer to: Console Switches (Page 21).
N Controls isolation lever,Refer to: Control Lock (Page 65).
P Seat, Refer to: Operator Seat (Page 47).
Q Left joystick, Refer to: Excavator End Controls (Page 103).

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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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11. Lift the machine slightly to check the balance of the machine and the installation of the lifting equipment. If the machine does not lift horizontally, adjust the length of the slings. Proceed slowly and evenly until the lift is complete.
12. Keep the machine horizontal during the lift. The centre of gravity of the machine is approximately above the slew centre.

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2. Install the nuts and bolts to secure the tooth in position.

ESCO Teeth

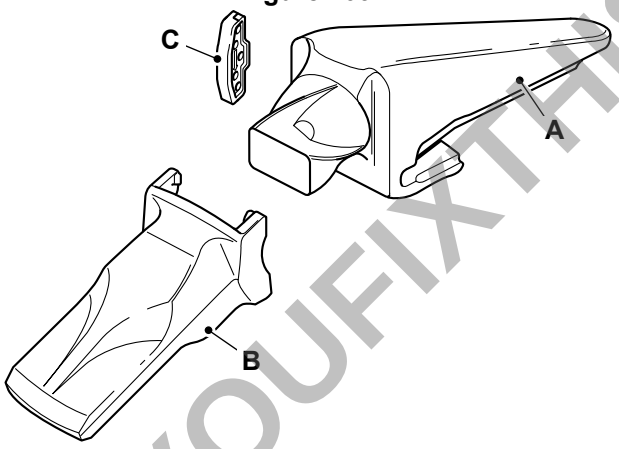
Introduction

This information only relates to the ESCO buckets supplied by JCB. If a bucket from another source is used, refer to the relevant manufacturer's manual.

A wide range of Super V-teeth are available for your machine, which are suitable for all digging conditions. The Super V system consists of an adaptor, tooth and locking pin. Refer to Figure 209.

The adaptor remains attached to the bucket and the teeth can be easily and quickly changed by one person. The method of removal/installation is the same for all types of teeth.

Figure 209.



A Adaptor
B Tooth
C Locking pin

Removal

1. Move the bucket into position.
   1.1. Make sure that the bucket is securely supported off the ground with sufficient space for the removal of the locking pin.
2. Stop the engine.
3. Remove the ignition key.
4. Remove the locking pin.
   4.1. Use a hammer and suitable drift, to carefully knock the locking pin down and out of its guide. Refer to Figure 210.

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Security

General

Vandalism and the theft of unattended machines is an ever increasing problem and JCB is doing everything possible to help stop this.

Your JCB dealer will be pleased to provide information on any of these sensible precautions. Act now!

Construction Equipment Security and Registration Scheme (CESAR)

CESAR (Construction Equipment Security and Registration) is a simple, effective method of machine identification and registration that operates throughout the United Kingdom and Ireland and across the whole spectrum of JCB products.

CESAR is a scheme to help decrease plant theft, and was developed by the Metropolitan Police and the Home Office Plant Theft Action Group.

The key to the scheme is its simplicity and it will mean that every police officer in the country will know how to identify construction machinery and verify ownership. This will provide a major leap forward in both protecting machinery, and recovering it.

The Construction Equipment Association is managing the scheme, and Datatag are providing the security material and support. JCB is fully supportive of the CESAR initiative and will offer it as a factory option across the range.

The CESAR kit includes 2 tamper proof triangular identification plates installed on either side of the machine, a unique transponder, mini radio frequency identification tags concealed throughout the machine, Datatag micro dots, and a unique DNA coded chemical painted on the machines major components. Plus a registration certificate logged onto the CESAR or DVLA databases, and a change of keeper form.

LiveLink

Your JCB machine may be installed with LiveLink, JCB's advanced machine monitoring system. LiveLink monitors a range of information about your machine and sends it through cellular and satellite communication back to JCB's secure monitoring centre.

The machine owners and JCB dealers can then view that information through the LiveLink website, by email and even through text message. If you want to know how LiveLink can help manage your JCB machines, contact your local dealer for more information.

Anti-Vandal Guards

Anti-Vandalism Guards (option)

The anti-vandalism guards are stored in a purpose built cage on the roof of the machine. Make sure the cage is locked before the machine is moved.

CAUTION! *Make sure the steps, handrails, and your footwear soles are clean and dry before climbing onto the machine. Always face the machine when climbing on and off it.*

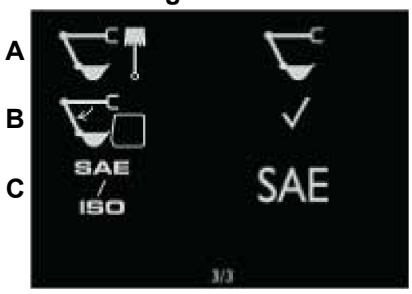
Unpacking the Guards

Make the machine safe. Refer to: Maintenance Position (Excavator End Lowered) (Page 195).

Unlock the cage and remove the guards. Leave the guards 2, 3 and 4 in the cage, they are installed from the top of the machine.

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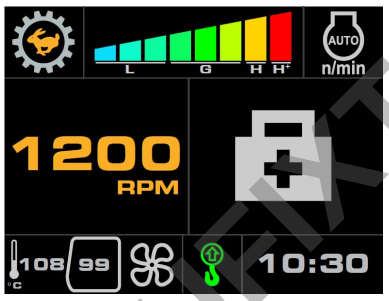
Figure 81.



A Slew/boom priority default
B Dipper arm limiter setup
C ISO/SAE controls selection

Error Log

Figure 82.



Press the rotary control again to display a list of the machine faults recorded. Turn the rotary control to switch between screens 1 and 2. Press the back button to return.

Figure 83.

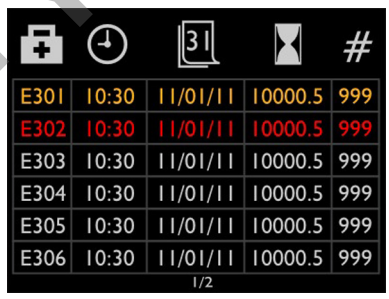
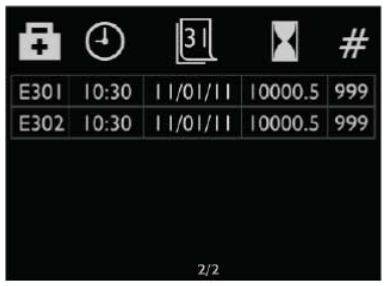


Figure 84.



The fault log screen is used to provide information on the active and previously active faults on the machine. The fault log display screen displays the fault code, time, date, engine hours and number of times that the fault has been active. By default, the fault log display shall only display active faults. It shall be possible to view active and historical faults by going to the diagnostic menu. Faults shall be displayed in the colour of their severity (critical = red, warning = yellow, trivial = gray).

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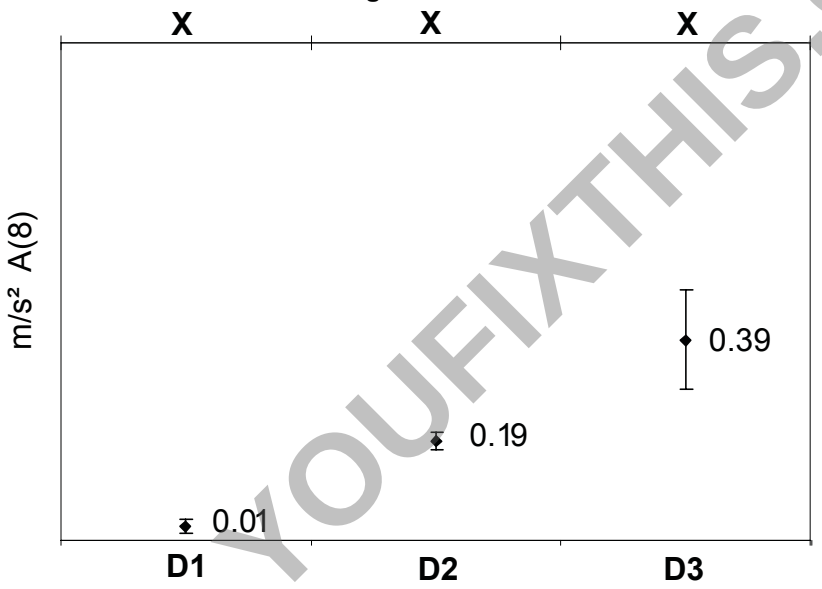
Vibration Data

For: JS115 [T4F], JS130 [T4F], JS145 [T4F] ..... Page 332
For: JS160 [T4F], JS180 [T4F], JS190 [T4F] ..... Page 333
For: JS200 [T4F], JS210 [T4F], JS220 [T4F], JS235 [T4F] ..... Page 333
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(For: JS115 [T4F], JS130 [T4F], JS145 [T4F])

The whole-body vibration emission under representative operating conditions (according to the intended use) are shown.

Figure 349.



X-Z Dominant axis
D1 Machine operating duty: Low idle
D2 Machine operating duty: Excavating
D3 Machine operating duty: Tracking (rough terrain)

The whole-body vibration emission calculated in accordance with ISO 2631-1:1997 for this machine type is 0.19 m/s² normalised to an 8 h reference period [A(8)] and based upon a test cycle defined in SAE J1166.

The hand-arm vibration calculated in accordance with the dynamic test conditions defined in ISO 5349-2: 2001 does not exceed 2.5 m/s².

The errors bars are due to variations in vibration emissions due to measurement uncertainty (50% in accordance with EN 12096:1997).

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Triple Articulated Boom

Figure 341.

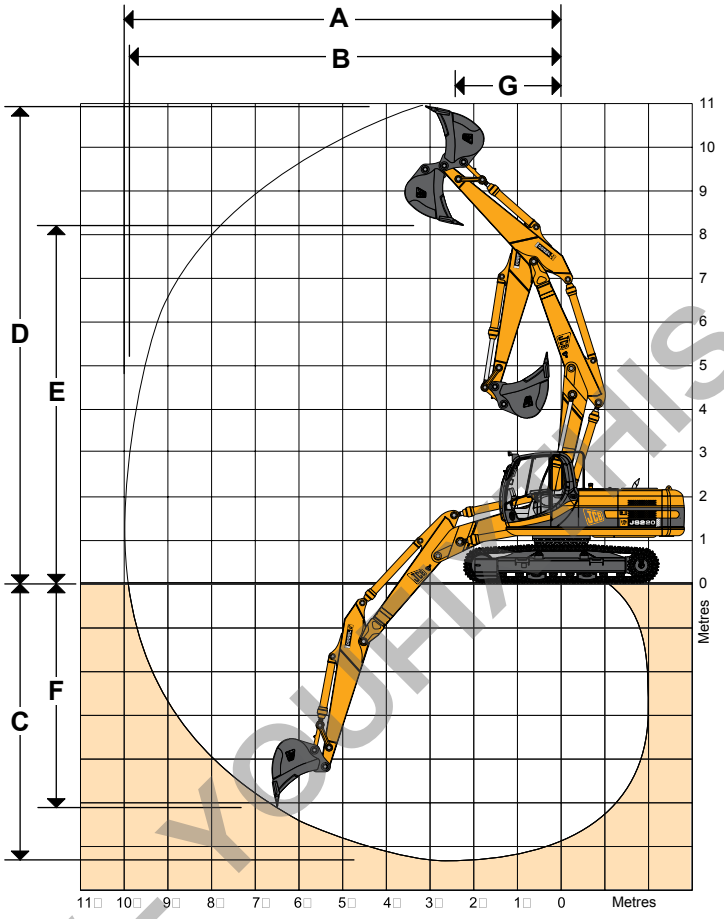


Table 122.

Boom length		**5,700 mm**	
Dipper length		**1,910 mm**	**2,400 mm**
A	Maximum digging reach	9,000 mm	9,440 mm
B	Maximum digging reach (on ground)	8,810 mm	9,260 mm
C	Maximum digging depth	5,290 mm	5,770 mm
D	Maximum digging height	10,200 mm	10,540 mm
E	Maximum dumping height	7,310 mm	7,650 mm
F	Maximum vertical wall cut depth	4,040 mm	4,540 mm
G	Maximum swing radius	2,500 mm	2,550 mm

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10. Do not tension the tracks too much, this will cause the track rail to wear the drive rollers and sprocket.
11. Always make sure you adjust the track tension to the specified limits. Incorrect tension can cause wear to the drive sprocket and the track rail.
    Refer to: Tracks (Page 371).
12. Repeat the procedure for the other track.

Check (Condition)

Check the condition of the track plates.

Check the track plate bolt torques. Refer to: Torque Values (Page 344).

Idler Wheels

Check (Condition)

1. Stop the machine on solid, level ground.
2. Do the steps 2 to 12 of Check/Adjust the Track Tension.
   Refer to: Check (Operation) (Page 234).
3. Check the top and bottom rollers for oil leaks. If leaks are found contact your JCB dealer
4. Repeat the steps 2 to 3 for the other track.

Rollers

Check (Condition)

1. Stop the machine on solid, level ground.
2. Do the steps 2 to 12 of Check/Adjust the Track Tension.
   Refer to: Check (Operation) (Page 234).
3. Check the idler wheels for oil leaks. If leaks are found contact your JCB dealer.
4. Repeat the steps 2 to 3 for the other track.

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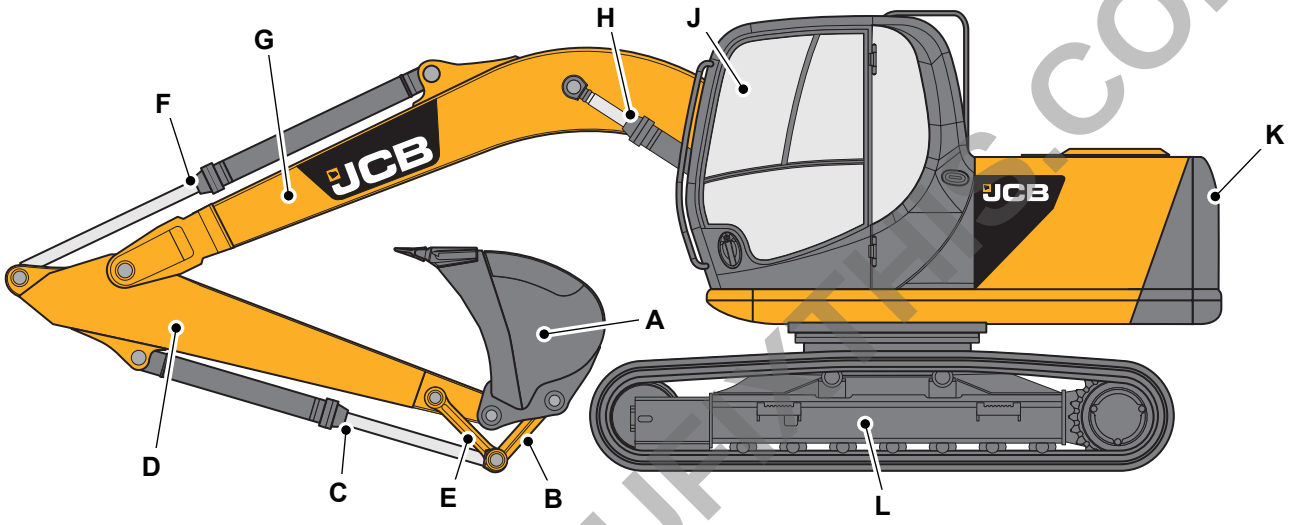
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attachment or working tool, could be projected and any area into which debris could fall from the machine. During the operation of the machine, keep all persons out of the danger zone. Persons in the danger zone could be injured.

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

Main Component Locations

Figure 3.



A Bucket
B Bucket link
C Bucket ram
D Dipper
E Dipper link
F Dipper ram
G Boom
H Boom ram
J Operators cab
K Counterweight
L Undercarriage

The boom dipper and bucket are collectively referred to as the excavator end, or dig end.

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Heating, Ventilating and Air-Conditioning (HVAC)

General

The operator must set the controls to obtain the best working environment in the operator station.

Close doors and windows for best HVAC (Heating Ventilation Air Conditioning) performance and in dusty conditions.

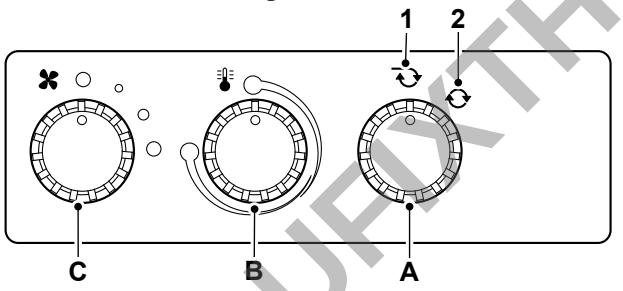
Poor ventilated air can cause tiredness. Do not operate the machine for long periods without ventilation or with the operator station fully closed and the fan turned off.

Air-Conditioning Controls

Heater Only Controls

Introduction

Figure 168.



A Recirculation switch
B Temperature control switch
C 3-speed fan switch
1 Recirculation switch - position '1'
2 Recirculation switch - position '2'

The heater control panel is installed on the left console.

The temperature is adjusted by the recirculation switch, a 3-speed heater fan switch and the temperature control switch.

Adjust the air vents to direct the hot air flow to the front window (for demisting) and/or the cab floor.

Air Control

Turn the recirculation switch to position '1' to let fresh air enter the cab.

Turn the recirculation switch to position '2' to recirculate the air, this should be used when you operate in a dusty working environment. Position '2' can also be used to increase the heater performance during cab warm-up and when machine coolant temperatures are below optimum.

Heat Control

Turn the temperature control switch clockwise to increase the temperature.

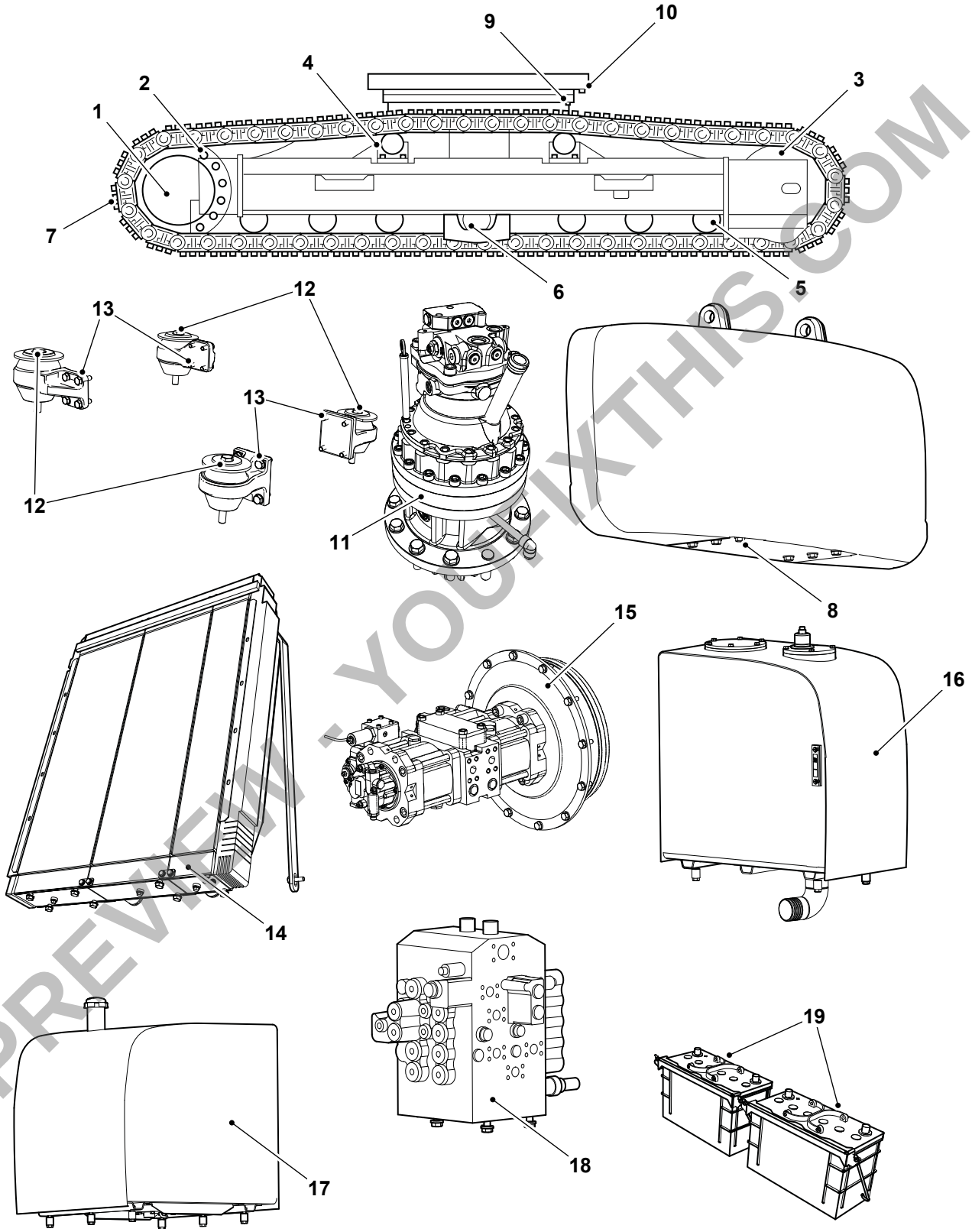
Turn the temperature control switch counterclockwise to decrease the temperature.

Heater Fan

Turn the 3-speed fan switch to adjust the speed of the heater fan. This functions only when the ignition key is in position I.

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Figure 358.



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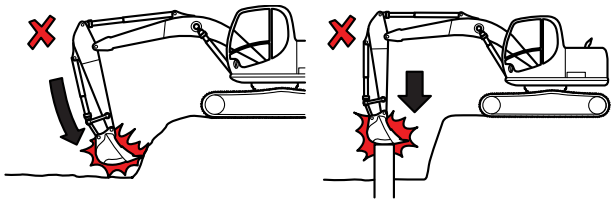
Notes:

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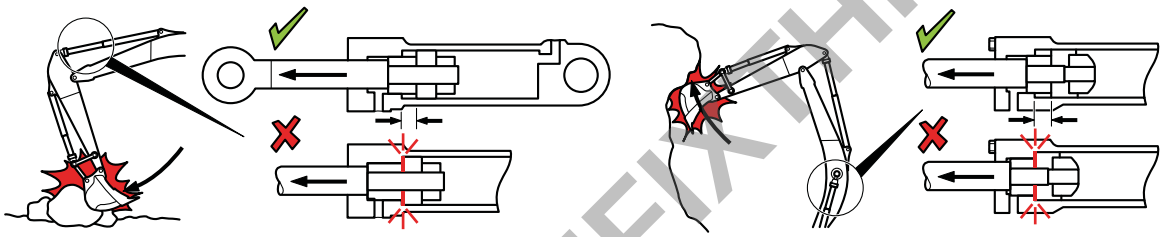
If impact force is used to do a task, it will cause damage to the dig end. An impact force will also create high pressures inside the cylinders, which will cause the cylinders to swell.

Figure 151.



The cylinders are designed with a cushion mechanism which will gradually release any back pressure. If an impact force is applied at the end of the cylinder stroke, the piston will hit the head or bottom end and cause damage.

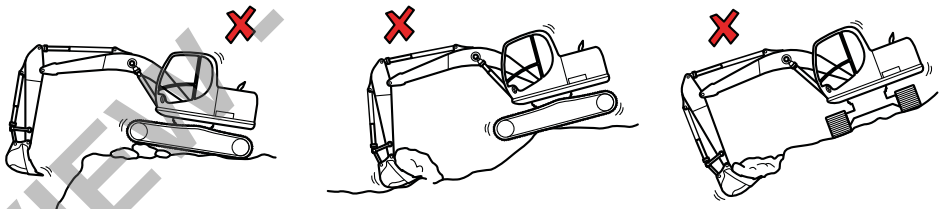
Figure 152.



Stability

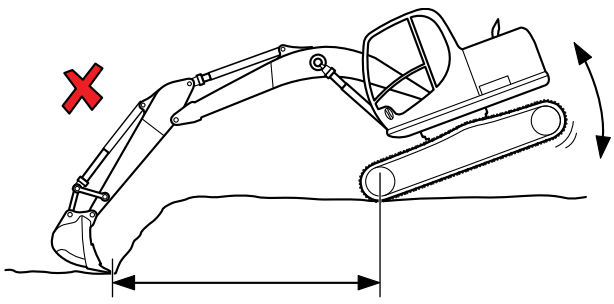
A machine which is stable during operation, increases productivity, extends the life of the machine and makes sure of operator safety.

Figure 153.



The dig point effects stability, if the dig point is too far away the machine can become unstable.

Figure 154.



Keep the dig point close to the machine to improve stability and increase the dig force.

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Lifting Hook/Lug Options

Refer to: Lifting With the Excavator End (Page 118).

Table 29.

Lifting hook	12.5 t
Lifting lug	17 t

Dimensions

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(For: JS115 [T4F])

Monoboom

Figure 260.

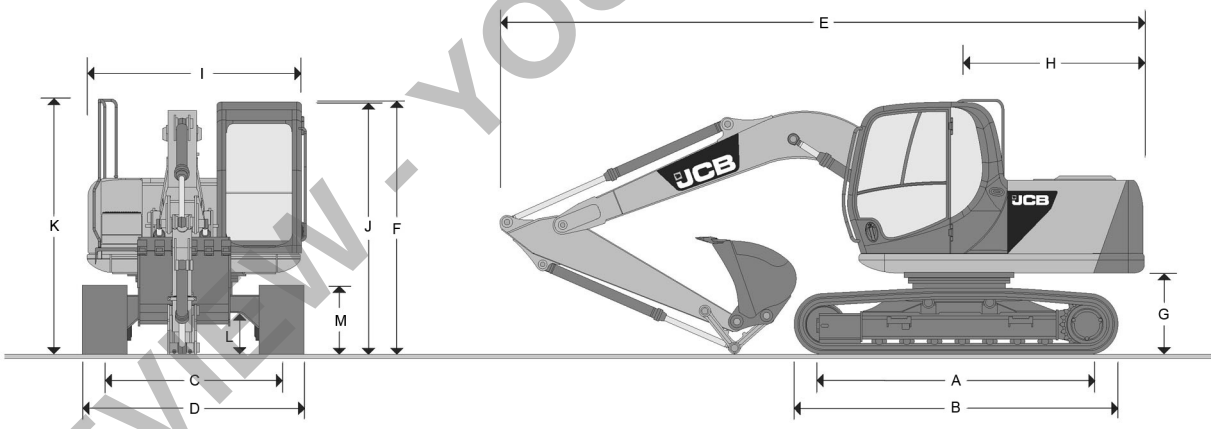


Table 30.

	Description	Length
A	Track length on ground	2,580 mm
B	Undercarriage overall length	3,317 mm
C	Track gauge	1,990 mm
D	Width over tracks (500 shoes)	2,490 mm
D	Width over tracks (600 shoes)	2,590 mm
D	Width over tracks (700 shoes)	2,690 mm

Table 31.

Dipper lengths		**1,950 mm**	**2,250 mm**	**2,800 mm**
E	Transport length	7,357 mm	7,357 mm	7,392 mm
F	Transport height	2,864 mm	2,864 mm	2,864 mm

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