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# Safety Notices

## Introduction

T1-006

### ⚠ WARNING

**Study the Operator Manual before starting the machine. You must understand and follow the instructions in the Operator Manual. You must observe all relevant laws and regulations. If you are unsure about anything, ask your JCB dealer or employer. Do not guess, you or others could be killed or seriously injured.**

INT-1-1-1_2

In this publication and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

### ⚠ DANGER

**Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.**

INT-1-2-1

### ⚠ WARNING

**Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.**

INT-1-2-2

### ⚠ CAUTION

**Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.**

INT-1-2-3

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# Machine Description

## The JCB Tracked Excavator

The JZ140 and JZ235 excavators are self propelled machines comprising a tracked undercarriage and a revolving upper structure which incorporates a boom, dipper, bucket and swing mechanism. It is mainly used for digging below ground level with bucket motions towards the machine. The upper structure can swing 360 degrees and discharge material while the tracked undercarriage remains stationary.

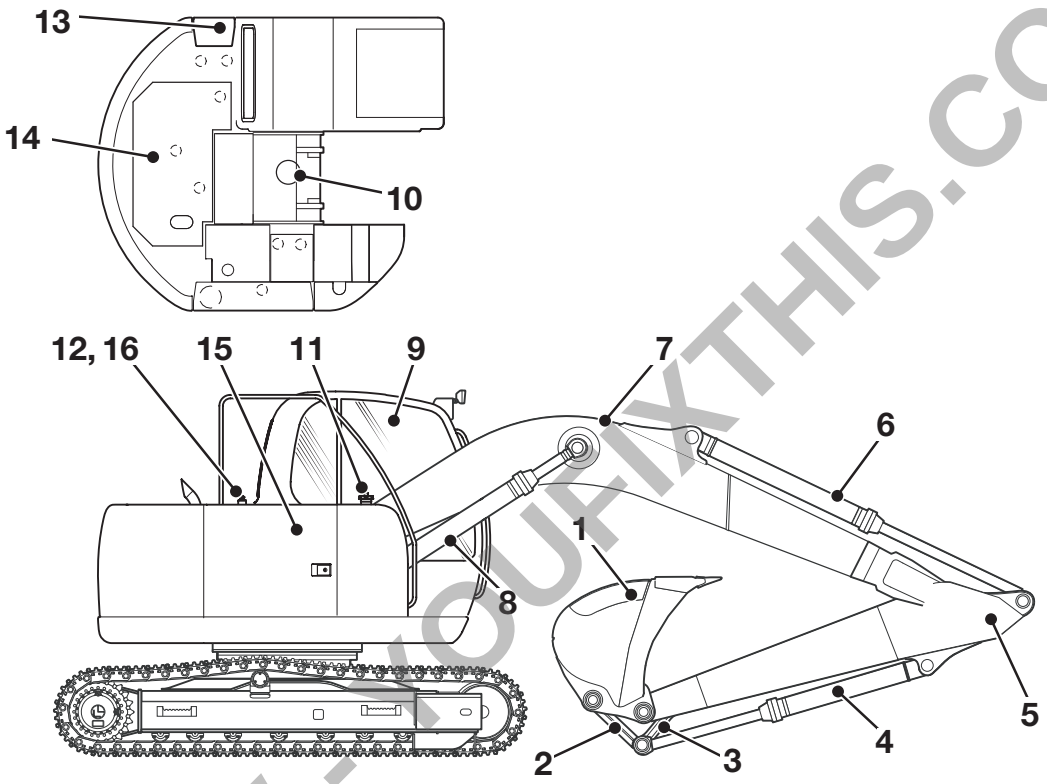



**Fig 1.**

**1** Bucket

**2** Bucket Link

**3** Dipper Link

**4** Bucket Ram

**5** Dipper

**6** Dipper Ram

**7** Boom

**8** Boom Ram

**9** Operators Cab

**10** Slew gearbox

**11** Fuel tank

**12** Hydraulic Oil Tank

**13** Battery

**14** Engine and Radiator

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# Travel Gearbox

## Checking the Track Gearbox Oil Level

**1** Prepare the machine.

Position the machine on level ground with the level and drain plugs as illustrated ⇒ *Fig 147. (171)*.

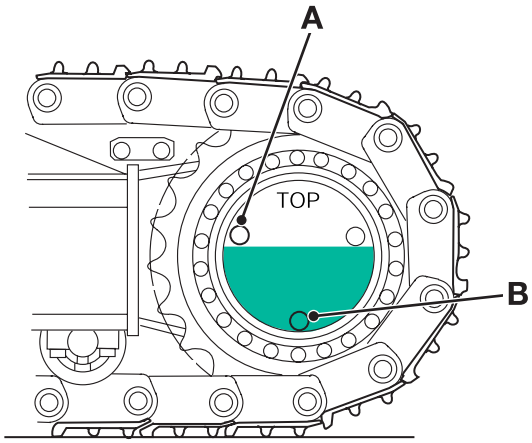



**Fig 147.**

**2** Check the level on one side.

Clean the area around filler/level plug **A** and remove it. Oil should be level with plug **A**. Top up through plug **A** if necessary, ⇒ *Lubricants and Capacities (110)* for oil types.

**3** Clean and refit the plug. Make sure it is tight.

**4** Check the level on the other side.

Repeat steps **1** to **3**.

## Changing the Track Gearbox Oil

**1** Prepare the Machine, ⇒ *Checking the Track Gearbox Oil Level (171)*

**2** Drain the oil on one side.

**a** Place a container below the drain plug to catch the oil. The container must be large enough to hold the maximum gearbox capacity, ⇒ *Lubricants and Capacities (110)*)

### ⚠ CAUTION

**Oil will gush from the hole when the drain plug is removed. Keep to one side when you remove the plug.**

2-3-4-2

**b** Remove filler/level plug **A** and drain plug **B**. Allow the oil to drain out.

**c** Wipe the plugs clean. Make sure you remove all metal particles.

**d** Wrap seal tape on the drain plug **B** and refit.

**3** Fill with new oil, ⇒ *Lubricants and Capacities (110)* for oil type and volume.

**a** Pour new oil through filler/level plug **A** until oil runs out of plug **A**.

**b** Check the condition of the o-ring, renew if it is damaged. Refit filler/level plug.

**4** Change the oil on the other side.

Repeat steps **1** to **3**.

**5** Check for leaks.

Run the machine, operate the tracking controls and then make sure there are no leaks.

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## Pre Start Cold Checks, Service Points and Fluid Levels

| | Operation | 10 | 50 | 250 | 500 | 1000 | 2000 | 4000 | 5000 |
|---|---|---|---|---|---|---|---|---|---|
| **ENGINE** | | | | | | | | | |
| Oil level | - Check | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Oil and Filter (1) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Oil Bypass Filter (if fitted) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Oil | - Sample | | | | | ☐ | ☐ | ☐ | ☐ |
| Pre Cleaner (if fitted) | - Change | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Air Cleaner Outer Element | - Change | | | | | ☐ | ☐ | ☐ | ☐ |
| Air Cleaner Inner Element | - Change | | | | | | ☐ | ☐ | |
| Air Cleaner Dust Valve | - Check and Clean | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Level | - Check | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Filter Element (Tier II) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Tank - Water and Sediment | - Drain | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Filler Cap | - Check and Clean | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Filler Cap (Dusty conditions) | - Check and Clean | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Lift Pump Strainer (2) (Tier II) | - Clean | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Coolant Quality/Level | - Check | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| Coolant | - Change | | | | | | | ☐ | |
| Fuel Pump Filter Element (Tier III) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fuel Sedimenter (Tier II) | - Drain and Clean | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Primary Fuel Filter/Sedimenter (Tier III) | - Drain and Clean | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Primary Fuel Filter/Sedimenter-filter (Tier III) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Main Fuel Filter/Sedimenter (Tier III) | - Drain and Clean | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Main Fuel Filter/Sedimenter-filter (Tier III) | - Change | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fan Belt Tension/Condition | - Check | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Valve Clearances | - Check and Adjust | | | | | ☐ | ☐ | ☐ | ☐ |
| Engine Mounting Bolts for Tightness | - Check | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Exhaust System Security | - Check | | | | ☐ | ☐ | ☐ | ☐ | ☐ |
| Air Inlet System Security | - Check | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Radiator | - Clean and Check | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

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The data plate also shows the serial numbers of the engine, transmission and axle(s), where applicable. But remember if any of these units have been changed, the serial number on the data plate may be wrong. Check on the unit itself.

## Lifting Regulations - Inspections and Tests

T3-003

Only your JCB Distributor can fully meet the requirements of the inspection and test parameters to suit UK Health and Safety Executive (H.S.E.) legal requirements along with providing Annual Inspections to meet your Insurance Company Policy conditions.

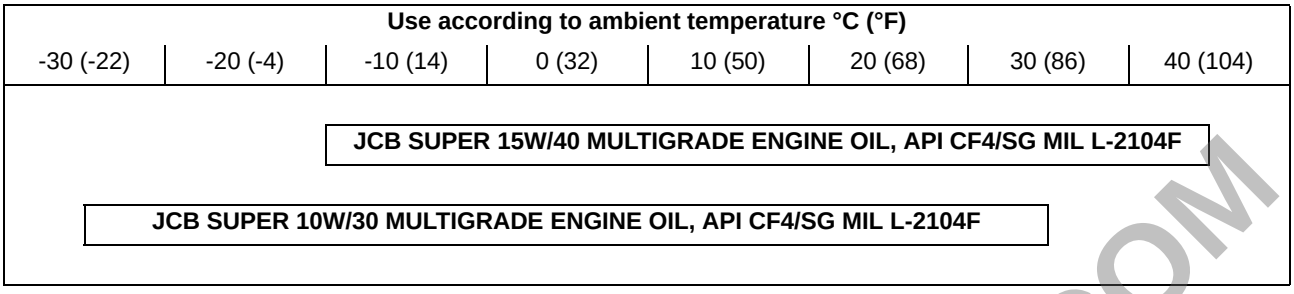
Only your JCB Distributor has the ability to meet the definition described covering a "Competent Person" to carry out these necessary tests and inspections. This ensures that only JCB Factory trained, experienced and up-to-date Engineers supported with all of the available data and material provided only to a JCB Distributor will ensure a thorough and reliable standard.

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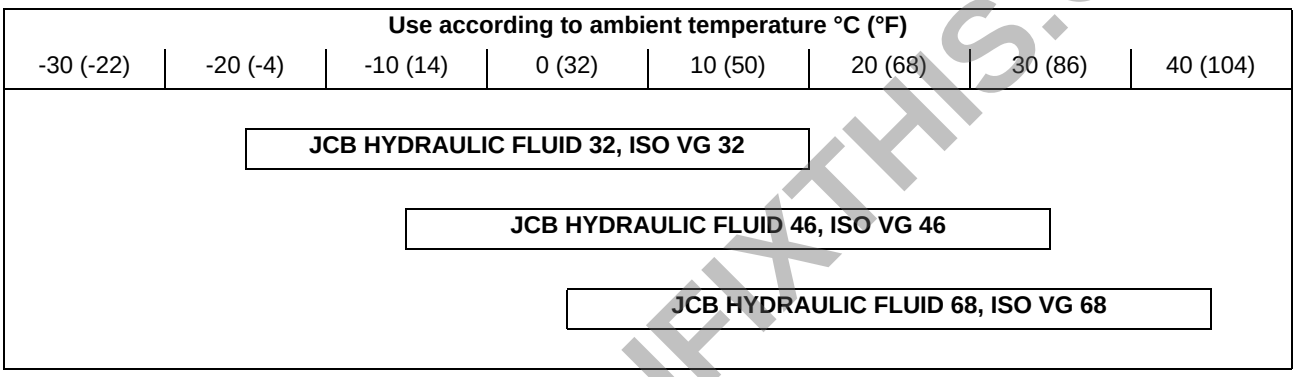


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## Engine Lubrication Chart




## Hydraulic Oil Chart




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# Operation

## Introduction

T2-006

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.

Before starting the machine, sit in the drivers seat and familiarise yourself with the layout of the cab. Use your 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 distributor.

The operator must always be aware of events happening outside the cab as well as inside the cab. Safety must always be the most important feature when operating the machine.

When you have familiarised yourself with 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.

Finally, 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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## Emergency Exit

In an emergency, if the door cannot be used; release the rear window by pulling on ring **R** to remove the window retaining bead completely. Push the window outward and clear of the frame.

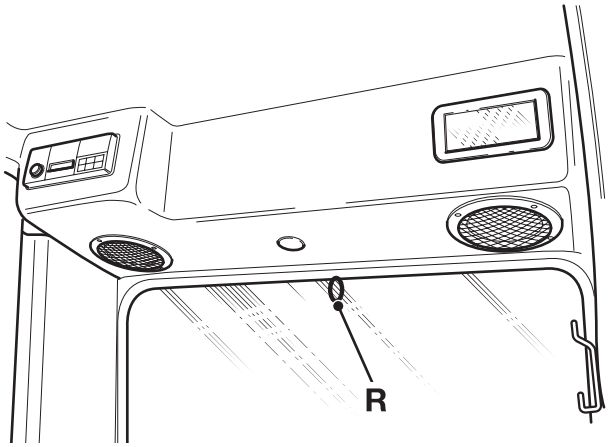



**Fig 19.**

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## Working Attachments

**Table 38. Overall low power**

| Cause | Remedy |
|---|---|
| Insufficient engine output | Refer to Engine Service Manual |
| Function drops due to wear of hydraulic pump | Replace hydraulic pump(1) |
| Defective main relief valve | Adjust the pressure or replace(1) |
| Low hydraulic oil | Refill |
| Viscosity of hydraulic oil incorrect | Replace with hydraulic oil of proper viscosity |
| Suction filter clogged | Replace suction filter |

**Table 39. Defective operations**

| Cause | Remedy |
|---|---|
| Hydraulic pump broken | Replace hydraulic pump(1) |
| Hydraulic oil low | Replace suction filter |

**Table 40. Insufficient work power**

| Cause | Remedy |
|---|---|
| Set pressure for main or port relief valve is low or incorrect | Adjust pressure or replace relief valve(1) |
| Damaged hydraulic ram seals | Replace hydraulic ram seals(1) |
| Damaged hydraulic ram, cylinder | Replace hydraulic ram/cylinder or the assembly(1) |

**Table 41. Attachment sinks down**

| Cause | Remedy |
|---|---|
| Damaged hydraulic ram seals | Replace hydraulic ram seals(1) |
| Damaged hydraulic ram, cylinder | Replace hydraulic ram/cylinder or the assembly(1) |
| Oil leakage inside control valve | Repair valve assembly, replace(1) |
| Oil leakage inside holding valve | Repair valve assembly, replace(1) |

*(1) Indicates jobs which should be done by a specialist. Refer to Service Manual.*

**Table 42. Abnormal noise from joints of the attachment**

| Cause | Remedy |
|---|---|
| Insufficient grease | Grease |
| Connecting pin seizure | Replace the bushing and/or pin |

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## Digging

### Digging Near Walls

**WARNING**

**When digging near a wall, take care not to undermine the foundations. The wall could collapse**

2-2-7-1

### Digging on Slopes

To dig a vertical trench on a slope, if possible cut a level base to work from. Dump the trench material on the uphill side of the trench, far enough away to prevent it falling back into the trench. ⇨ *Working on Slopes ( 73)*.

## Dumping into a Truck

Position the truck(s) as shown to cut out unnecessary manoeuvring.

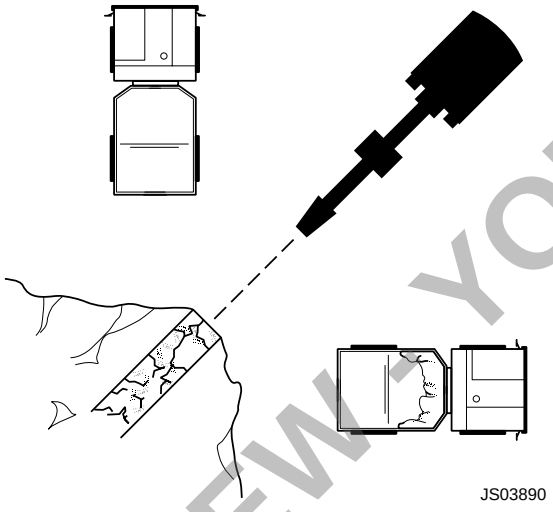



**Fig 73.**

Do not dump the material in one sudden movement. Roll the bucket forward in stages until it is empty. Use the joystick to rock the bucket back and forth to loosen any sticky material.

Keep the wind on your back. This keeps the dust away from you and your machine.

If the truck body is about as long as a bucket's width, tip the load into the centre of the truck. If the truck is two bucket-widths long or more, load the front of the truck first.

## Backfilling

When backfilling on a slope, pile the material on the high side of the trench if possible.

Set the bucket level to the ground. Select a bucket height and excavating speed which will give you maximum depth of cut without overloading the machine. Work at right angles to the trench, filling a bucket's width at a time. Leave any spillage until the trench is filled. Use the spillage to finish the job by driving the length of the trench with bucket low to the ground.

## Pulling out of Soft Ground

If the machine gets bogged down in soft ground, the excavator controls can be used to assist in getting moving again.

To free the machine it is necessary to put something underneath the track(s) to provide grip. Proceed as follows:

**1** One Side Bogged Down.

**a** Swing the boom towards the side to be freed and stop it when at 90° to the track.

**b** Set the dipper at 90° to the boom and crowd the bucket.

**c** Lower the boom until the bucket touches the ground. If necessary place a board, or something else with broad ground contact, under the bucket.

**d** Lower the boom further so as to lift the bogged down track off the ground.

**e** Place a mat, board or log, etc. beneath the track and raise the boom until the track rests on it.

**f** Drive the machine away.

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