SERVICE MANUAL

EXCAVATOR

JS210, JS230

EN - 9813/8000 - ISSUE 1 - 10/2016

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

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.

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01 - Machine

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Acronyms Glossary

ARV	Auxiliary Relief Valve
FEAD	Front End Accessory Drive
MRV	Main Relief Valve
PIL	Parts Identification List
PPE	Personal Protective Equipment

03 - Safety

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03 - Safety - Yours and Others

Introduction

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, 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.

06 - Safety Warnings

Introduction

In this manual and on the machine, 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 (shown) also helps to identify important safety messages in this manual and on the machine. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

Figure 1. The safety alert system

09 - General Safety

Introduction

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. If you are a new operator, get yourself trained in the skills of using a machine before trying to work with it. If you don't, you will not do your job well, and you will be a danger to yourself and others. 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 complies 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.

03 - Steel Track

Adjust

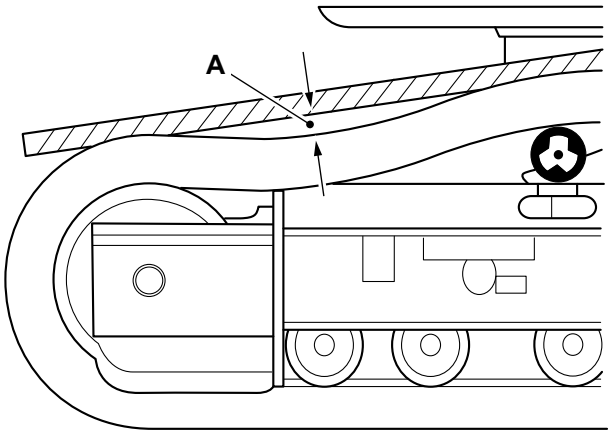
⚠ **Notice:** Always make sure that the track tension measurement is not less than specified or severe strain to the track will result.

WARNING When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much grease could spurt out or the valve cover fly out and cause serious injury.

Track Tension

1. Stop the machine on solid, level ground
2. Move the machine backwards and forwards several times, then move the machine forwards and stop it on level ground.
3. Stop the engine.
4. Check the track tension.
   4.1. Place a long, stiff and straight piece of steel or wood on top of the tracks touching above the front idler and the top roller.

Figure 381.



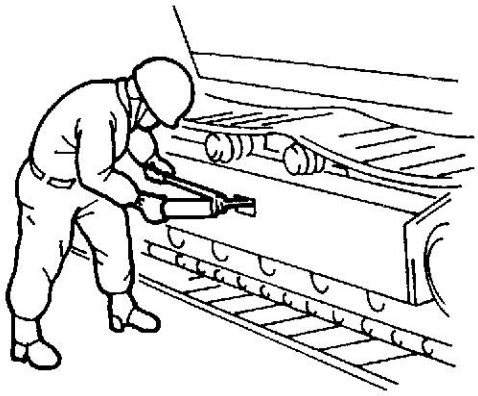
A Track tension - measurement

5. Make sure the track tension is within the specified limits.

   Refer to: Driveline > Track > General (Page 27-11).

6. If necessary, adjust the track tension.
   6.1. To adjust the track tension, inject or release grease from the check valve.

Figure 382.



6.2. Inject grease to increase the tension.

6.3. Release grease to decrease the tension.

6.4. When you open the check valve, always stand to one side and loosen it a slowly until the grease starts to release.

6.5. Do not loosen the check valve too much, grease can spurt out or the cover of the check valve can come off and cause serious injury.

7. Never attempt to disassemble the check valve or try to remove the grease point from the check valve.

8. If there is a clearance between the idler wheel shaft and the track frame, use pressure to apply the grease.

9. If there is no clearance after the application of grease the grease cylinder or recoil assembly may be faulty.

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.

12. Repeat the procedure for the other track.

Remove and Install

⚠ **WARNING** When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much grease could spurt out or the valve cover fly out and cause serious injury.

WARNING Stand clear and to one side of the track while you remove the master pin. When the master pin is removed the track could fall forward and injure you.

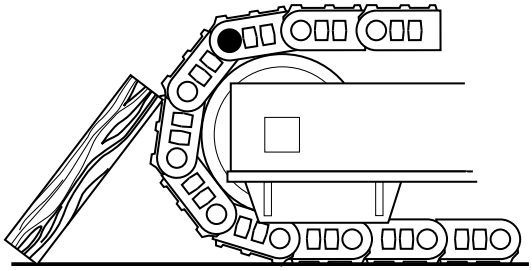
Remove

1. Make the machine safe.

   Refer to: Machine > Safety (Page 01-1).

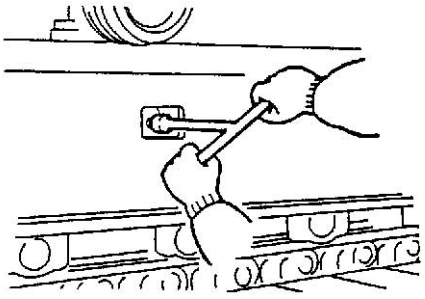
2. Move the track link until the master pin is over the take-up roller in the position shown, place a wooden block under the track shoe. Refer to Figure 383.

Figure 383.



3. Slacken the check valve to bleed out the grease.

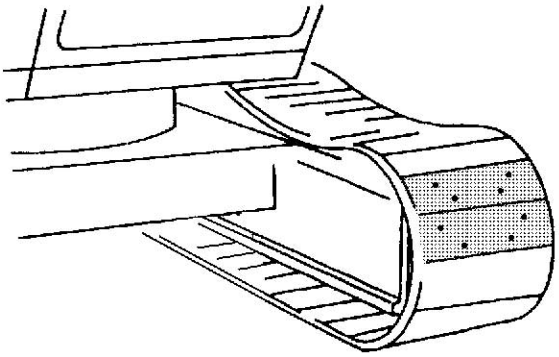
Figure 384.



4. Disconnect the track link by removing the locking pin and knocking out the master pin as follows:

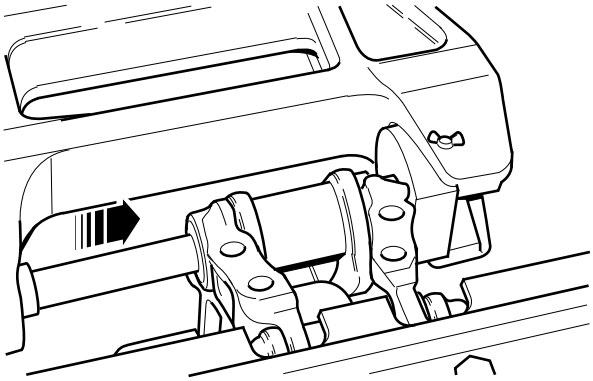
   4.1. Remove bolts and lift off the track shoe plates adjacent to the master pin.

Figure 385.



4.2. Position a suitable hydraulic press so that its ram aligns with the master pin.

Figure 386.



4.3. Insert the spacer bar between the master pin and the hydraulic ram.

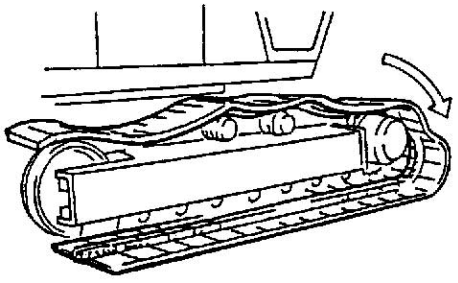
4.4. Slowly operate the press hydraulic ram and press out the master pin.

4.5. Remove the seal rings from each side of the chain link.

5. Operate the track drive motor to remove the track.

6. Lift the lower frame clear of the track.

Figure 387.



6.1. Support the lower frame with wooden blocks.

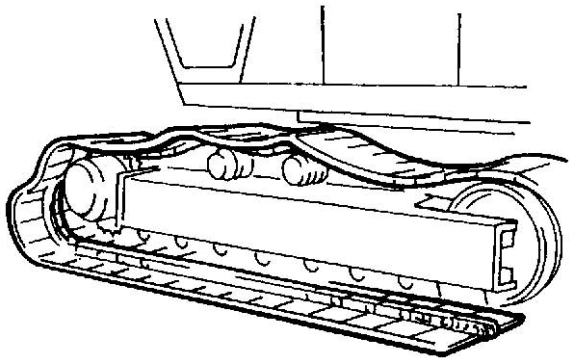
6.2. Using suitable equipment pull the track clear of the machine.

Install

1. Position the lower frame on the track.

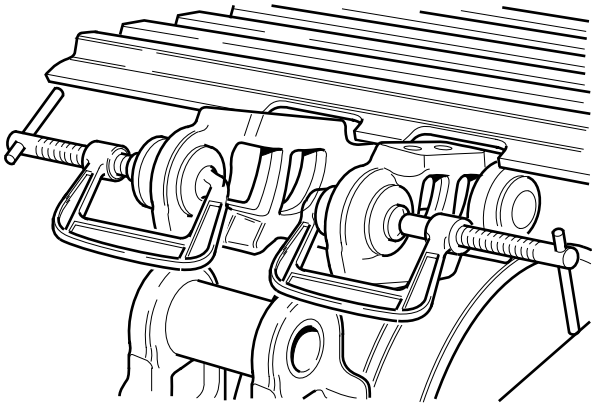
2. Move the track link.

Figure 388.



3. Clean the seal ring housing in the chain link. Insert the seal rings and clamp into position.

Figure 389.

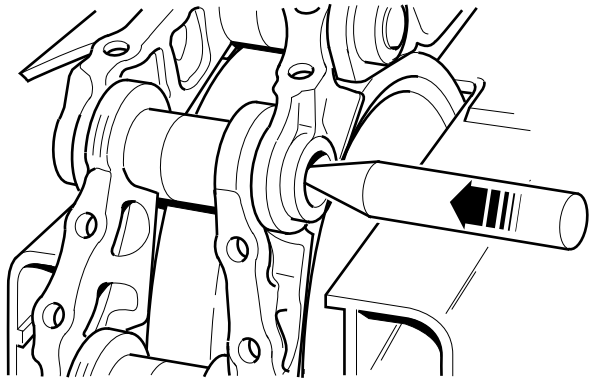


4. Using a plastic hammer, tap the upper link down to align holes.

4.1. As the links overlap, the seal rings will be held in position. Remove the clamps.

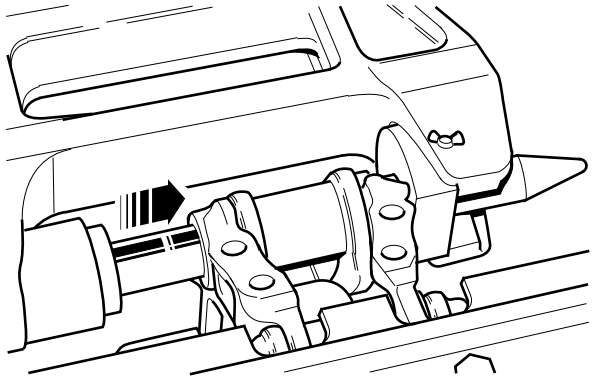
5. Insert the pointed guide pin from the inner face and tap through its full length.

Figure 390.



6. Position a suitable hydraulic press so that its ram aligns with the guide pin.
7. Insert the master pin into its locating hole.
8. Slowly operate the hydraulic press ram to press the master pin into position.

Figure 391.



9. Install the track shoe plates.

   Refer to: Driveline > Track > Shoe Plate (Page 27-17).

10. Adjust the track tension.

    Refer to: Driveline > Track > Steel Track (Page 27-12).

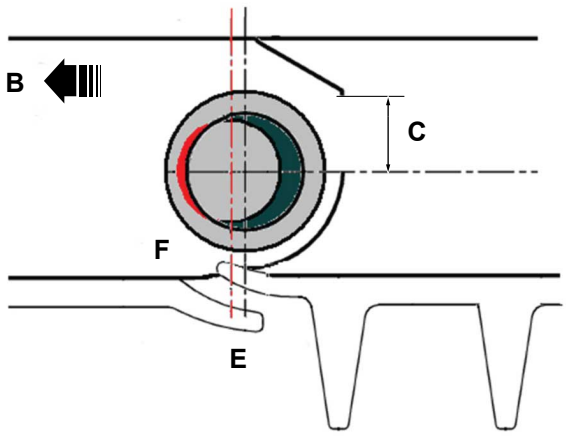
Store and Recommission

During storage, or non continuous work periods in wet environmental conditions, the track link joints can seize.

Figure 392.

When the machine is used, wear occurs between the pin and bush in the track link. This results in the gap between the pin and bushes increasing.

Figure 393.



B Traction
C Gap increase
E Pitch elongation
F Wear

The metal particles worn from the pin and bush can accumulate in the bush leading to seizure of the link joint.

To help prevent seizure make sure to complete the following steps.

1. Operate the machine (making sure that the machine travels on its tracks) at least once per week to keep the link joints flexible.
2. Do the undercarriage basic maintenance before you stop the machine (washing and mud cleaning).

3. Avoid allowing the machine to stand for long periods in a wet environment (such as in wet soil or water).
4. Do a regular check of the track tension to avoid excessive joint wear (excessive track tension affects joint internal wear).

   Refer to: Driveline > Track > Steel Track (Page 27-12).

04 - Shoe Plate

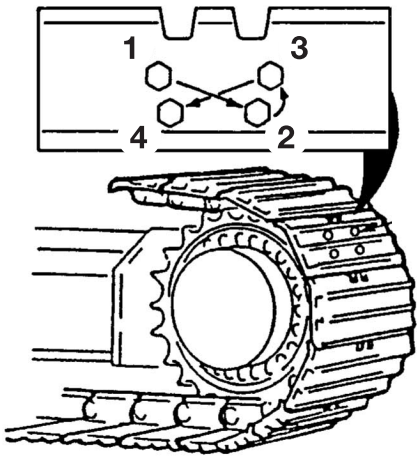
Check (Condition)

If a track shoe plate is used when it is loose, it may fail. Immediately tighten the track plate bolts whenever they are found to be loose.

To check the track shoe plate bolts proceed as follows:

1. Torque tighten the bolts in the sequence shown and check that the nuts and shoe are closely installed to the link joining surface.

Figure 394.



2. Start the engine and move the machine forwards or backward to get access to the next set of track bolts. Stop the engine.
3. Do the step 1 again.
4. Repeat the above procedures until all the track bolts have been checked.

Table 175. Track Shoe Plate Bolts - Checking Torques

Machines	Checking Torque N·m
JS200 Series	756-801

Remove and Install

Remove

1. Start the engine and move the machine forwards or backward to get access to the applicable set of track shoe plate bolts. Stop the engine.
2. Remove the bolts followed by the track shoe plate.

Install

1. Check that the track shoe plate and its fixing nuts are closely installed to the link joining surface.
2. Torque tighten the bolts to the specified torque in the sequence shown. Refer to Table 176.

Figure 395.

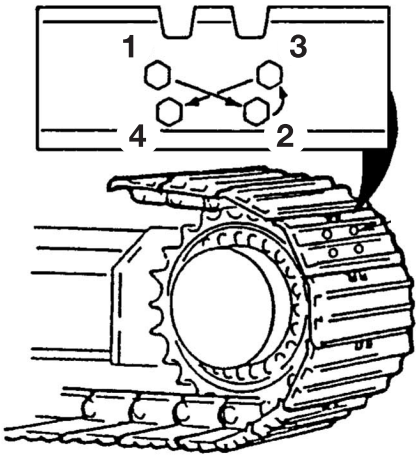


Table 176. Track Shoe Plate Bolts - Tightening Torques

Machines	Torque N·m
JS200 Series	840-890

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