

DX210W

Shop Manual

K1017314AE

Serial Number 5001 and Up

DOOSAN reserves the right to improve our products in a continuing process to provide the best possible product to the market place. These improvements can be implemented at any time with no obligation to change materials on previously sold products. It is recommended that consumers periodically contact their distributors for recent documentation on purchased equipment.

This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

Table of Contents

Safety

Wheel Excavator Safety	SP000956
------------------------------	----------

Specifications

Specification for DX210W	SP000957
--------------------------------	----------

General Maintenance

General Maintenance Procedures	SP000016
Standard Torques	SP000813

Upper Structure

Cabin	SP001231
Counterweight.....	SP000959
Fuel Tank.....	SP000961
Fuel Transfer Pump	SP000021
Swing Bearing.....	SP001232
Swing Reduction Gear.....	SP001233

Lower Structure and Chassis

Ram Lock Valve.....	SP000923
Selector Valve.....	SP000926
Double Pilot Check Valve	SP000927
Solenoid Valve.....	SP000928
Front Axle	SP000929
Rear Axle.....	SP000930

Engine and Drive Train

Transmission	SP000962
Drive Coupling (Main Pump).....	SP000963

Hydraulics

Hydraulic System Troubleshooting, Testing and Adjustment	SP001097
Accumulator.....	SP000984
Center Joint (Swivel).....	SP000919
Cylinders.....	SP001098
Main Control Valve	SP000966
Swing Motor.....	SP000985
Travel Motor.....	SP001110
Counterbalance Valve	SP000991
Main Pump & PTO.....	SP000988
Gear Pump	SP000989
Service Brake Supply Valve	SP000990
Dozer Control Valve.....	SP000992
Steering Valve	SP000993
Accelerator Pedal Valve (Hydraulic)	SP000964
One Spool Valve.....	SP000996
Remote Control Valve (Work Lever / Joystick)	SP000069
Breaker EPPR Valve (Opt)	SP000192
Service Brake Pedal Valve	SP001006
Solenoid Valve Assembly	SP000997
Hydraulic Schematic.....	SP001107

Electrical System

Electrical System	SP001108
Electrical Schematic	SP001256

Attachments

Boom and Arm.....	SP001255
Bucket.....	SP001001

Wheel Excavator Safety

Edition 1

SAFETY PRECAUTIONS



CAUTION!

Follow all safety recommendations and safe shop practices outlined in the front of this manual or those contained within this section.

Always use tools and equipment that are in good working order.

Use lifting and hoisting equipment capable of safely handling load.

Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

The contents of this section apply to the following models and serial number ranges.

MODEL	SERIAL NUMBER RANGE
DX140W	5001 and Up
DX160W	5001 and Up
DX190W	5001 and Up
DX210W	5001 and Up

TO THE OPERATOR OF A DOOSAN EXCAVATOR



DANGER!

Unsafe use of the excavator could lead to serious injury or death. Operating procedures, maintenance and equipment practices or traveling or shipping methods that do not follow the safety guidelines on the following pages could cause serious, potentially fatal injuries or extensive damage to the machine or nearby property.

Please respect the importance of taking responsibility for your own safety, and that of other people who may be affected by your actions.

The safety information on the following pages is organized into the following sections:

1. "General Safety Essentials" on page 1-10
2. "Location of Safety Labels" on page 1-11
3. "Summary of Safety Precautions for Lifting in Digging Mode" on page 1-12
4. "Unauthorized Modifications" on page 1-13
5. "General Hazard Information" on page 1-13
6. "Before Starting Engine" on page 1-22
7. "Machine Operation" on page 1-26
8. "Maintenance" on page 1-32
9. "Battery" on page 1-40
10. "Towing" on page 1-42
11. "Shipping and Transportation" on page 1-43



WARNING!

Improper operation and maintenance of this machine can be hazardous and could result in serious injury or death.

Operator and maintenance personnel should read this manual thoroughly before beginning operation or maintenance.

Keep this manual in the storage compartment to the rear of the operator's seat, and have all personnel involved in working on the machine read the manual periodically.

Some actions involved in operation and maintenance of the machine can cause a serious accident, if they are not done in a manner described in this manual.

The procedures and precautions given in this manual apply only to intended uses of the machine.

If you use your machine for any unintended uses that are not specifically prohibited, you must be sure that it is safe for any others. In no event should you or others engage in prohibited uses or actions as described in this manual.

DOOSAN delivers machines that comply with all applicable regulations and standards of the country to which it has been shipped. If this machine has been purchased in another country or purchased from someone in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult *DOOSAN* or your *DOOSAN* distributor before operating the machine.

 **SAFETY ALERT SYMBOL** 

Be Prepared - Get to Know All Operating and Safety Instructions.

This is the Safety Alert Symbol. Wherever it appears in this manual or on safety signs on the machine you should be alert to the potential for personal injury or accidents. Always observe safety precautions and follow recommended procedures.

Learn the Signal Words Used with the Safety Alert Symbol

The words "**CAUTION**," "**WARNING**," and "**DANGER**" used throughout this manual and on decals on the machine indicate degree of risk of hazards or unsafe practices. All three degrees of risk indicate that safety is involved. Observe precautions indicated whenever you see the Safety Alert "Triangle," no matter which signal word appears next to the "Exclamation Point" symbol.

 **CAUTION!**

This word is used on safety messages and safety labels and indicates potential of a hazardous situation that, if not avoided, could result in minor or moderate injury. It may also be used to alert against a generally unsafe practice.

 **WARNING!**

This word is used on safety messages and safety labels and indicates potential of a hazardous situation that, if not avoided, could result in serious injury or death. It may also be used to alert against a highly unsafe practice.

 **DANGER!**

This word is used on safety messages and safety labels and indicates an imminent hazard of a situation that, if not avoided, is very likely to cause death or extremely serious injury. It may also be used to alert against equipment that may explode or detonate if handled or treated carelessly.

Safety precautions are described in SAFETY from page -11 on.

DOOSAN cannot predict every circumstance that might involve a potential hazard in operation and maintenance. Therefore the safety messages in this manual and on the machine may not include all possible safety precautions. If any procedures or actions not specifically recommended or allowed in this manual are used, you must be sure that you and others can do such procedures and actions safely and without damaging the machine. If you are unsure about the safety of some procedures, contact a *DOOSAN* distributor.

Swing Bearing

Edition 1

SAFETY PRECAUTIONS



CAUTION!

Follow all safety recommendations and safe shop practices outlined in the front of this manual or those contained within this section.

Always use tools and equipment that are in good working order.

Use lifting and hoisting equipment capable of safely handling load.

Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

The contents of this section apply to the following models and serial number ranges.

MODEL	SERIAL NUMBER RANGE
DX210W	5001 and Up

SWING BEARING MAINTENANCE

Operating Recommendation

The service life of the swing bearing may be extended if a conscious, daily effort is made to equalize usage over both ends of the excavator. If the excavator is used in the same operating configuration day in and day out (for example, with the travel motors always under the counterweight, or with the attachment over one side of the machine more than the other), the bearing's service life could be reduced. Taking a few minutes in the middle of each work shift to reposition the excavator, to work the opposite end of the bearing, will provide a payoff in terms of more even, gradual rate of wear and extended service life.

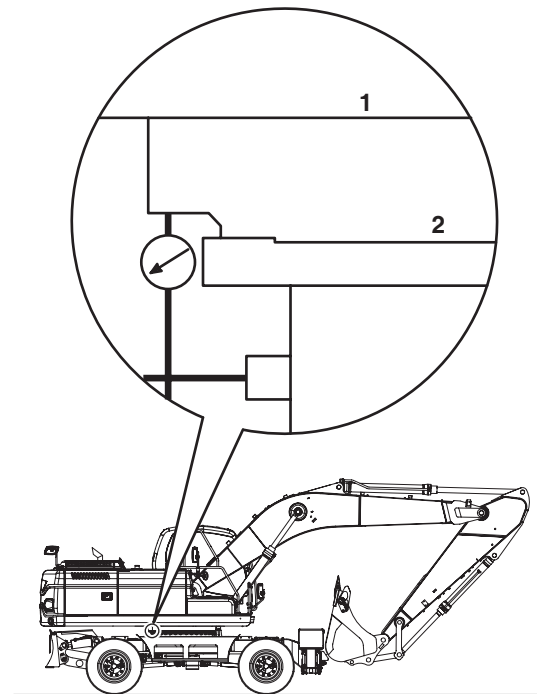
Measuring Swing Bearing Axial Play

Periodic, regular checks of bearing displacement should be made at least twice a year. Use a dial indicator. Push the attachment against the ground to lift the excavator off the ground and take measurements at 4 points, 90° apart, around the circumference of the bearing (Figure 1).

Record and keep all measurements. Play in the bearing should increase minimally from one inspection to the next. Eventually, however, as the bearing begins to approach the limit of its service life, clearance increases become much more pronounced and the actual measured play in the bearing could exceed twice the value that was measured when the machine was new.

Measuring Bearing Lateral Play

When vertical checks are made, the side to side play in the bearing can be checked by fully retracting the arm and bucket cylinders and extending the tip of the bucket as far forward as it will go. With the excavator parked on a flat, level surface and the bucket tip just off the ground, push against the bucket sideways to take up all of the lateral clearance in the bearing. (Less than 100 lb of force should be required to move the bucket over all the way.) Check lateral play in both directions and record the values. When the bearing is beginning to approach the end of its service life, measured lateral clearance should start to show larger and larger increases.



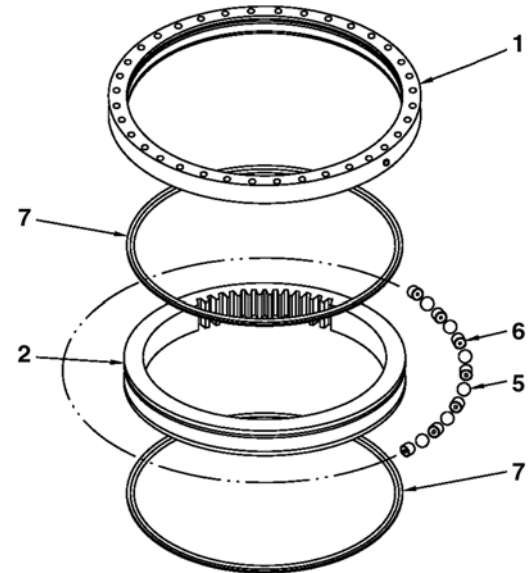
FG009224

Figure 1

Swing Bearing Basic Operation

The swing bearing, which connects the upper structure with the lower structure, consists of an inner ring, outer ring and ball bearings. During swing movement, power from the swing motor is transferred to the pinion by planetary gears connected to gears on the inner ring, which is fixed in the undercarriage. Ball bearings turn the outer ring.

Reference Number	Description
1	Outer Ring
2	Inner Ring
3	Tapered Pin
4	Plug
5	Ball
6	Retainer
7	Seal A

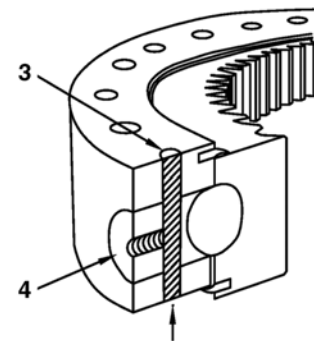


FG003909

Figure 2

Rebuilding Swing Bearing

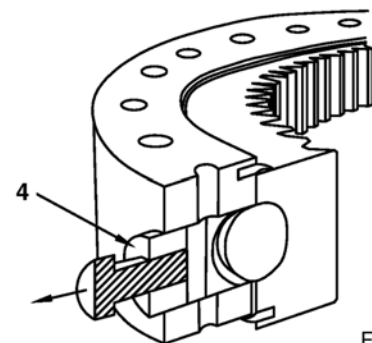
1. Remove tip of tapered pin (3, Figure 3) using grinder and tap lightly to remove debris.



FG003884

Figure 3

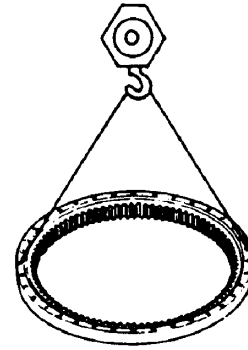
2. Remove plug (4, Figure 4) using a M10 x 1.25 bolt.



FG003885

Figure 4

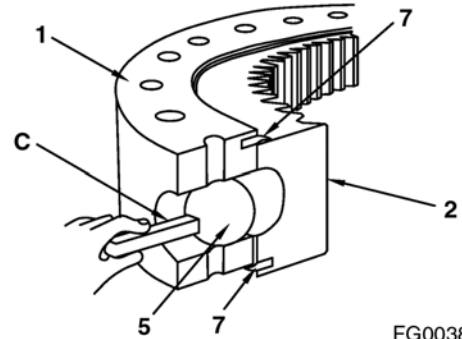
3. Lift outer ring and check that inner ring can move freely. See Figure 5, if not, replace seal (7, Figure 6).



1588A

Figure 5

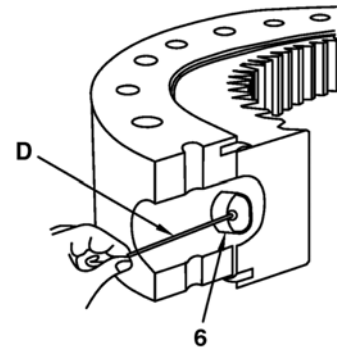
4. Turn inner ring and use magnet bar (C, Figure 6) to remove steel balls (5).



FG003885

Figure 6

5. Turn inner ring and use wire (D, Figure 7) to remove retainers (6).



FG003885

Figure 7

GENERAL DESCRIPTION

Theory of Operation

The swing motor final drive is a two-stage planetary gearbox with two planet gears, two sun gears and two-stage output reduction. The planetary gear engages the ring gear. The pinion gear is connected to the output shaft and spline.

The final drive reduces swing motor rpm in order to increase swing motor output torque. The available maximum swing speed provides a fast turning rate for efficient, rapid work cycling with more than adequate power for good acceleration.



Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com