

DX225NLC

Shop Manual

K1024241E

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

Track Excavator Safety	SP000014
------------------------------	----------

Specifications

Specification for DX225NLC	SP001010
----------------------------------	----------

General Maintenance

General Maintenance Procedures	SP000016
Standard Torques	SP000813

Upper Structure

Cabin	SP000943
Counterweight.....	SP000940
Fuel Tank.....	SP001014
Fuel Transfer Pump	SP000021
Swing Bearing.....	SP001109
Swing Reduction Gear	SP000915

Lower Structure and Chassis

Track Assembly	SP000911
----------------------	----------

Engine and Drive Train

Drive Coupling (Main Pump)	SP001069
----------------------------------	----------

Hydraulics

Hydraulic System Troubleshooting, Testing and Adjustment	SP000913
Accumulator.....	SP000028
Center Joint (Swivel).....	SP000029

Cylinders.....	SP000030
Swing Motor.....	SP001013
Travel Motor.....	SP000922
Gear Pump.....	SP000931
Main Control Valve.....	SP000034
Axial Piston Pump.....	SP001008
PTO Server	SP000933
Remote Control Valve (Work Lever / Joystick)	SP000069
Travel Control Valve (with Damper)	SP000070
Solenoid Valve Assembly.....	SP000445
Breaker EPPR Valve (Opt).....	SP000192
Hydraulic Schematic (DX225NLC).....	SP001057

Electrical System

Electrical System	SP000935
Electrical Schematic (DX180LC/DX225LC/DX225NLC/DX255LC)	SP000936

Attachments

Boom and Arm	SP000937
Bucket.....	SP000939

Track 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
DX180LC	5001 and Up
DX225LC	5001 and Up
DX225NLC	5001 and Up
DX255LC	5001 and Up
DX300L	5001 and Up
DX340LC	5001 and Up
DX420LC	5001 and Up
DX480LC	5001 and Up
DX520LC	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 1-33
9. "Battery" on page 1-42
10. "Towing" on page 1-44
11. "Shipping and Transportation" on page 1-45
12. "Lifting With Sling" on page 1-45



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.



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.

GENERAL SAFETY ESSENTIALS

Accessory Applications

The excavator has been primarily designed for moving earth with a bucket. For use as a grapple or for other object handling, contact *DOOSAN* for proper installation and application. Lifting-work applications (unless restricted or prohibited by local regulations) are permitted in approved lift configuration, to rated capacity only, with no side-loading. DO NOT use the machine for activities for which it was not intended. DO NOT use the bucket for lifting work, unless lift slings are used in the approved configuration.

Use of an accessory hydraulic hammer (breaker), work in rough terrain, demolition applications or other hazardous operation may require installation of additional protective structures to safeguard the operator.

Lifting Capacity Rating Configuration

Lifting capacity ratings that are printed at the end of this safety section are based on the machine being level, on a firm supporting surface, with hooks and slings attached in approved configuration. Loads must be balanced and supported evenly. Use tag lines to keep the load steady if wind conditions and large surface area are a problem. Work crew hand signals, individual tasks and safe procedures should all be universally understood before the lift is made.

IMPORTANT

Before using the excavator to make lifts check municipal and regional regulations or statutes that could apply. Governing ordinances may require that all heavy lifting be done with single purpose equipment specifically designed for making lifts, or other local restrictions may apply. Making heavy lifts with a general purpose excavator that can be used for digging, loading, grading or other work may be expressly forbidden by a regional injunction or other legal prohibition. Always follow all of the other instructions, guidelines and restrictions for Safe Lifting in the Operation and Maintenance Manuals.

Swing Reduction Gear

Edition 1

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.

Parts List

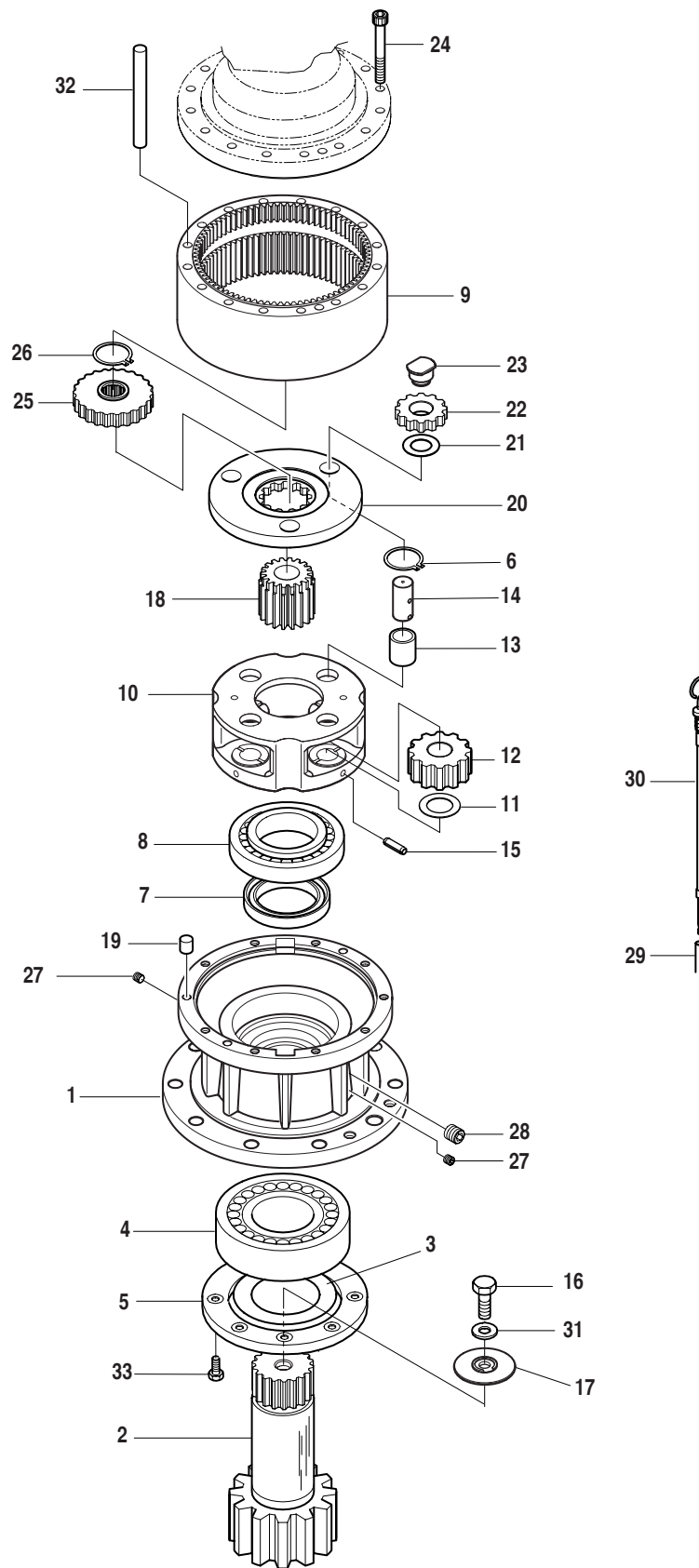


Figure 1

FG007053

Reference Number	Description
1	Casing
2	Drive Shaft
3	Plate
4	Spherical Roller Bearing
5	Cover Plate
6	Snap Ring
7	Oil Seal
8	Spherical Roller Bearing
9	Ring Gear
10	No. 2 Carrier
11	No. 2 Thrust Washer
12	No. 2 Planet Gear
13	No. 2 Bush
14	No. 2 Pin
15	Spring Pin
16	Hex Head Bolt
17	No. 3 Thrust Washer

Reference Number	Description
18	No. 2 Sun Gear
19	Lock Pin
20	No. 1 Carrier
21	No. 1 Thrust Washer
22	No. 1 Planet Gear
23	No. 1 Pin Assembly
24	Socket Head Bolt
25	No. 1 Sun Gear
26	Snap Ring
27	Plug
28	Plug
29	Level Gauge Pipe
30	Level Gauge
31	Double Tap Washer
32	Pipe
33	Hex Head Bolt

Specifications

Swing Reduction Gearbox	Specification
Drive Type	Two-stage Planetary Gear
Reduction Ratio	19.636
Maximum Output Speed	83.6 rpm
Maximum Output Torque	1,120 kg·m (8,100 lb ft)
Weight	120 kg (265 lb)

Pinion Gear	Specification
Type	Spur Gear
Gear P.C.D	156 mm (6.14 in)
No. of Teeth	13
Module	12

REMOVAL

1. Park on firm and level ground.
2. Lower front attachment (bucket) to ground.
3. Shut down engine.
4. Set safety lever on "RELEASED" position.
5. Turn starter switch to "I" (ON) position.



WARNING!

If engine must be running while performing maintenance, always use extreme caution. Always have one person in cab at all times. Never leave cab with engine running.

6. Fully stroke work levers (joysticks) in all directions to relieve any pressure from accumulators.
7. Set safety lever on "LOCK" position.
8. Turn key to "O" (OFF) position and remove from starter switch.
9. Hang a maintenance warning tag on controls.
10. Disconnect negative (-) battery cable leading to frame from battery.
11. Tag and disconnect hoses from swing motor (1, Figure 3). Plug and cap hoses and ports to prevent contamination from entering hydraulic system or component.
12. Assemble drain hose (3, Figure 3) to drain valve (8) and drain oil from reduction gearbox (5, Figure 3).
13. Remove drain hose (3, Figure 3) from drain valve (8) and disconnect hose (2, Figure 3) from reduction gearbox (5).
14. Disconnect grease lubrication line (7, Figure 3) from reduction gearbox (5).
15. Remove eleven bolts and washers (4, Figure 3) holding swing reduction gearbox (5) to frame.
16. Using a suitable lifting device, sling swing motor (1, Figure 3) and remove swing motor and reduction gearbox (5) as an assembly from unit.

NOTE: *There is a alignment pin (6, Figure 3), on reduction gearbox flange.*

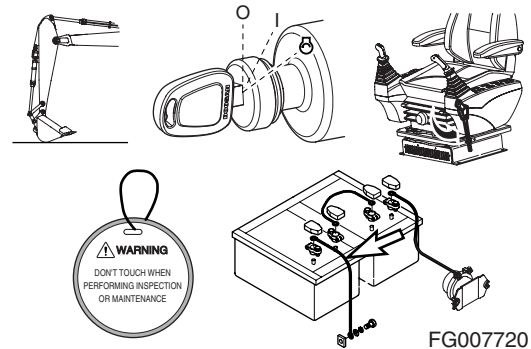


Figure 2

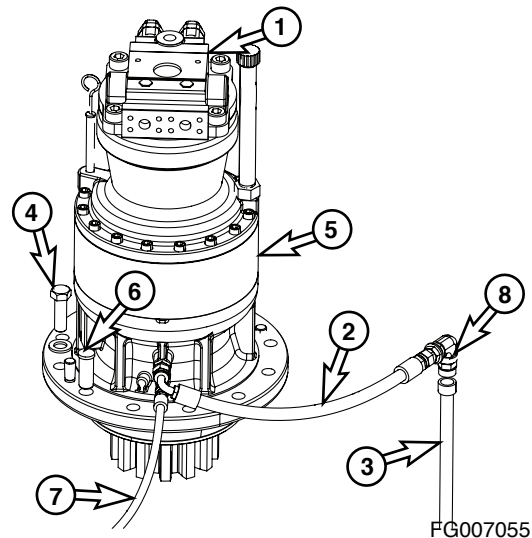


Figure 3

DISASSEMBLY

IMPORTANT

Select a clean place.

Spread a rubber mat or cloth on top of the overhaul workbench to prevent parts from being damaged.

1. Remove bolts and motor from swing reduction case.
-



CAUTION!

The motor should be separated without damage or any foreign substance.

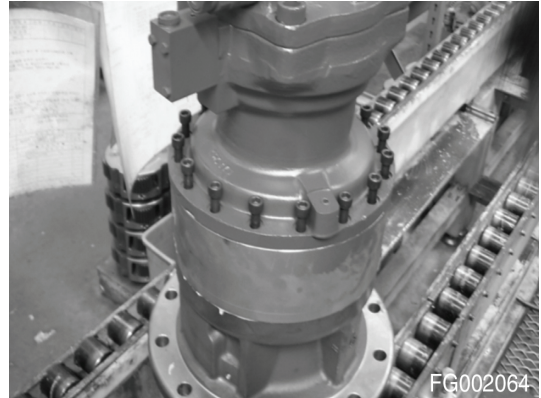


Figure 4



CAUTION!

Care should be taken not to damage mounting surface of motor. Carefully remove all gasket material from mounting surfaces.

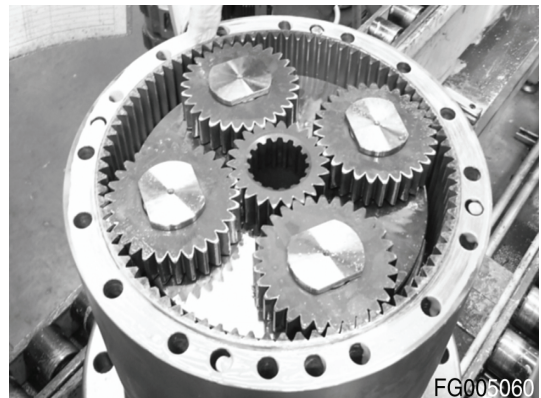


Figure 5

2. Remove No. 1 sun gear from No. 1 carrier.
-



CAUTION!

Care should be taken not to damage teeth of No. 1 sun gear.

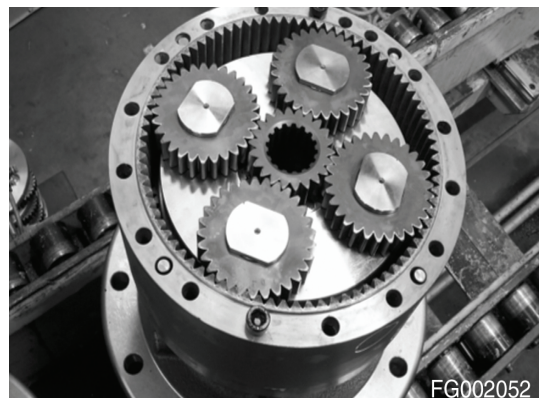


Figure 6

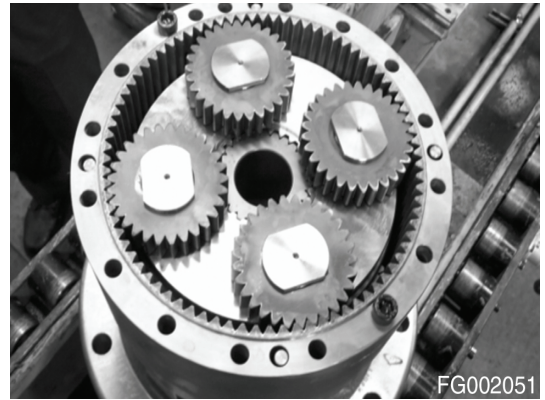


Figure 7

3. Remove No. 1 carrier.

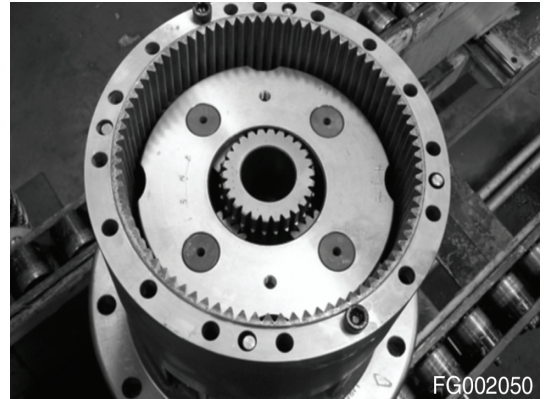


Figure 8

4. Remove washer and No. 2 sun gear.



CAUTION!

Care should be taken not to damage teeth of No. 2 sun gear.

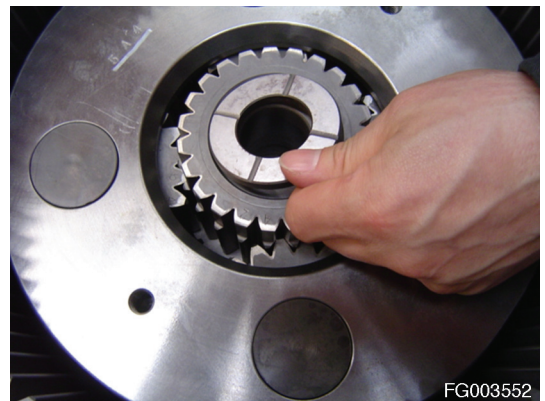


Figure 9

5. Remove bolt in No. 2 carrier.

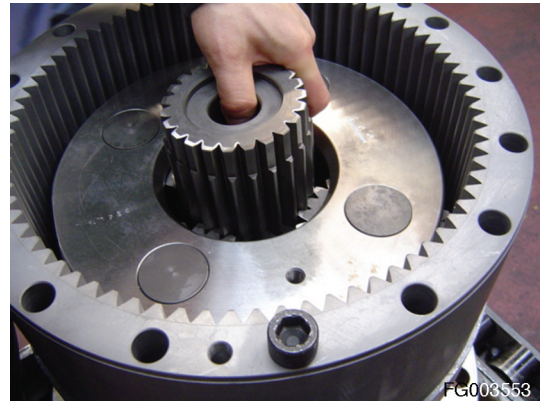


Figure 10

6. Install eye bolts in No. 2 carrier and remove it from ring gear.



CAUTION!

Care should be taken not to damage teeth of No. 2 carrier and ring gear.

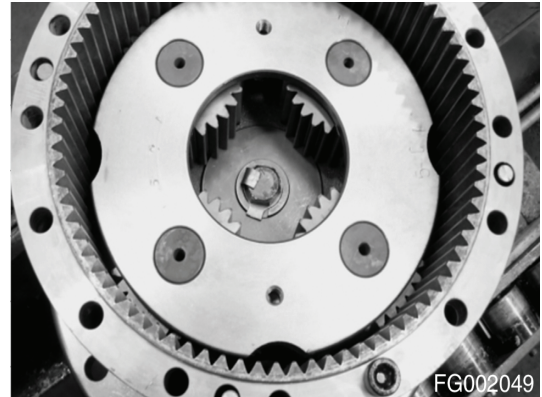


Figure 11

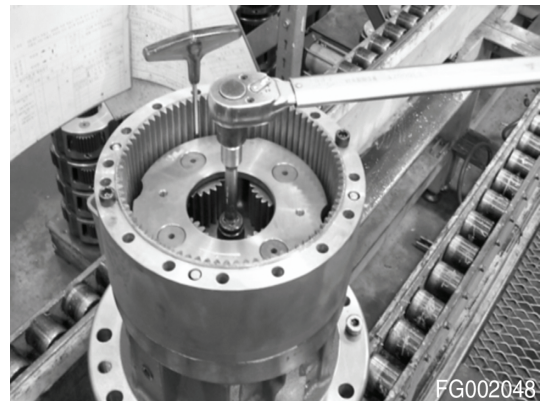


Figure 12

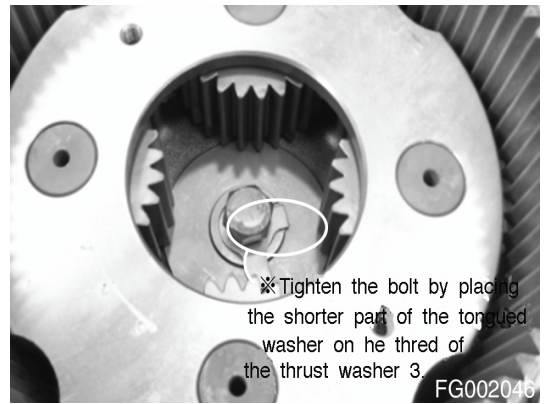


Figure 13

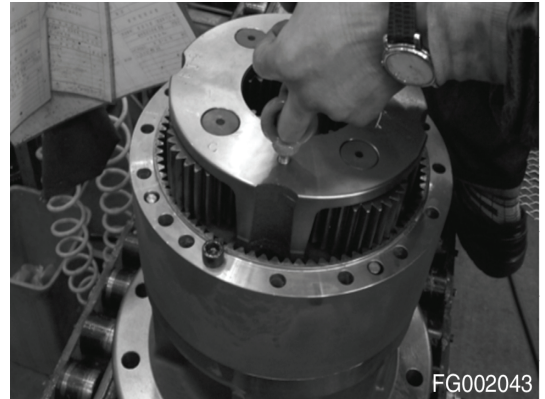


Figure 14

7. Install eye bolts in ring gear and remove it.



CAUTION!

Care should be taken not to damage mounting surfaces of ring gear and case. Carefully remove all gasket material from mounting surfaces.

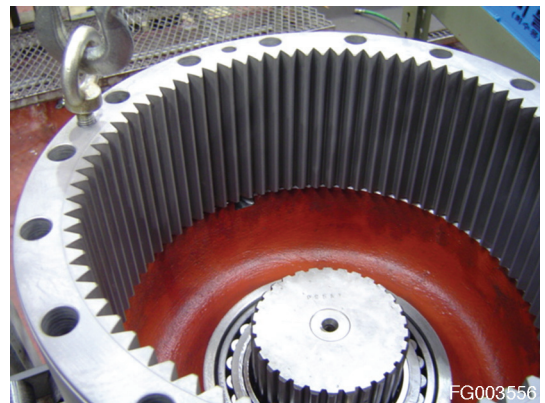


Figure 15

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