

# **DX480LCA**

# **DX500LCA**

Shop Manual

950106-00411E

Serial Number 10001 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.....	SP002025
-----------------------------	----------

## Specifications

Specification for DX480LCA / DX500LCA .....	SP002887
---	----------

## General Maintenance

General Maintenance Instructions.....	SP002454
Standard Torques.....	SP002404

## Upper Structure

Cabin .....	SP002904
Counterweight.....	SP002902
Fuel Tank.....	SP002905
Fuel Transfer Pump (Opt).....	SP000021
Swing Bearing.....	SP001856

## Lower Structure and Chassis

Track Assembly .....	SP002561
----------------------	----------

## Engine and Drive Train

Drive Coupling (Main Pump).....	SP000026
---------------------------------	----------

## Hydraulics

Hydraulic System Troubleshooting, Testing and Adjustment .....	SP002973
Accumulator.....	SP000028
Center Joint (Swivel).....	SP002545
Cylinders.....	SP000193
Swing Device .....	SP002565

Travel Device.....	SP002566
Main Pump.....	SP000186
Main Control Valve .....	SP000187
Remote Control Valve (Work Lever / Joystick) .....	SP002974
Travel Control Valve (with Damper).....	SP002906
Solenoid Valve Assembly .....	SP001622
Breaker EPPR Valve (Opt) .....	SP000192
Hydraulic Schematic.....	SP002957

## **Electrical System**

Electrical System .....	SP002453
Electrical Schematic .....	SP002031

## **Attachments**

Boom and Arm.....	SP001851
Bucket.....	SP002958

# Track Excavator Safety

Edition 2

# SAFETY INSTRUCTIONS

---



## WARNING

---

### AVOID DEATH OR SERIOUS INJURY

Instructions are necessary before operating or servicing machine. Read and understand the Operation and Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments repairs or service. Untrained operators and failure to follow instructions can cause death or serious injury.

---

## APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX225LCA	5167 and Up
DX300LCA	5001 and Up
DX340LCA	5001 and Up
DX420LCA	10001 and Up
DX480LCA	10001 and Up
DX500LCA	10001 and Up

# TO THE OPERATOR OF A DOOSAN EXCAVATOR

---



## AVOID DEATH

**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 1-9
2. "Location of Safety Labels" on page 1-10
3. "Summary of Safety Precautions for Lifting in Digging Mode" on page 1-11
4. "Unauthorized Modifications" on page 1-12
5. "General Hazard Information" on page 1-12
6. "Before Starting Engine" on page 1-21
7. "Machine Operation" on page 1-24
8. "Maintenance" on page 1-31
9. "Battery" on page 1-39
10. "Towing" on page 1-41
11. "Shipping and Transportation" on page 1-42
12. "Lifting With Sling" on page 1-42



## WARNING

---

### AVOID DEATH OR SERIOUS INJURY

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 sent. 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 Signal Words Used with 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 threat of a hazardous situation that, if not avoided, could result in serious injury or death. It may also be used to alert against 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 detonate or explode if handled or treated carelessly.**

---

Safety precautions are described in SAFETY from page -10 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 any 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.**

---

# Track Assembly

Edition 1

# TRACK TENSION



## WARNING

### AVOID DEATH OR SERIOUS INJURY

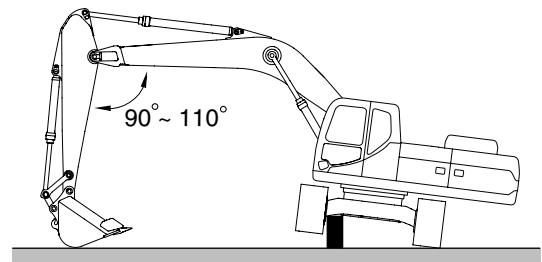
Measuring track tension requires two people. One person must be in the operator's seat, operating the controls while the other person makes dimensional checks. Block frame to make sure the machine won't move or shift position during service. Warm up the engine to prevent stalls, park the excavator in an area that provides level, uniform ground support and/or use support blocks when necessary.

The track adjusting mechanism is under very high-pressure. NEVER release grease pressure too fast. The track tension grease valve should never be loosened more than one (1) complete turn from the fully tightened down position. Bleed off grease pressure slowly. Keep your body away from the valve always. Always wear eye and face protection when adjusting track tension.

Track shoe link pins and bushings wear with normal usage, reducing track tension. Periodic adjustment is necessary to compensate for wear and it may also be required by working conditions.

1. Track tension is checked by jacking up one side of the excavator. See Figure 1. Place blocking under frame while taking measurement.

Turn the track backward by 1 - 2 turns.



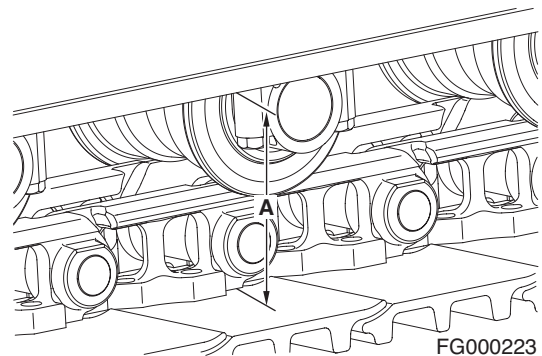
FG018383

Figure 1

2. Measuring the distance (A, Figure 2) between the bottom of the side frame and the top of the lowest crawler shoe. Recommended tension for operation over most types of terrain is distance "B" in below table.

**NOTE:** Clean off the tracks before checking clearance for accurate measurements.

3. Too little sag in the crawler track (less than clearance distance "B" in below table) can cause excessive component wear. The recommended adjustment can also be too tight causing accelerated stress and wear if ground conditions are wet, marshy or muddy.



FG000223

Figure 2

4. The increased clearance recommended for muddy, sandy or snowy ground conditions is between distance "C" in the below table.

Terrain Type	Recommended Distance "A"
Normal "B"	380 - 410 mm (14.96 - 16.14 in)
Muddy, Sandy or Snowy "C"	410 - 460 mm (16.14 - 18.11 in)



## WARNING

### AVOID DEATH OR SERIOUS INJURY

The track adjusting mechanism is under very high-pressure. **NEVER** release grease pressure too fast. The track tension grease valve should never be loosened more than one (1) complete turn from the fully tightened down position. Bleed off grease pressure slowly. Keep your body away from the valve always. Always wear eye and face protection when adjusting track tension.

5. Track tension adjustments are made through the grease fitting (1, Figure 3) in the middle of each side frame. Adding grease increases the length of an adjustment cylinder (2). Extending the adjustment cylinder increases the pressure on the tension spring pushing the track idler wheel outward.
6. If there is not enough slack or clearance in the tracks and the adjustment is too tight, the idler wheel and adjusting cylinder can be retracted by bleeding off grease through hole in adjustment cylinder (2, Figure 3).

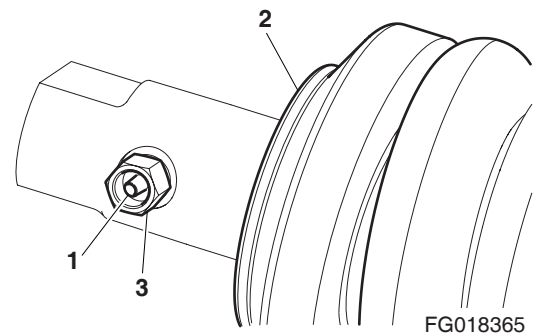


Figure 3

# CLEANING AND INSPECTION (WEAR LIMITS AND TOLERANCES)

---



## CAUTION

---

### AVOID INJURY

Refer to "Welding Precautions and Guidelines" information in "General Maintenance Procedures" section for general recommendations and specific safety precautions, before starting any lower travel frame component rebuilding procedure.

---

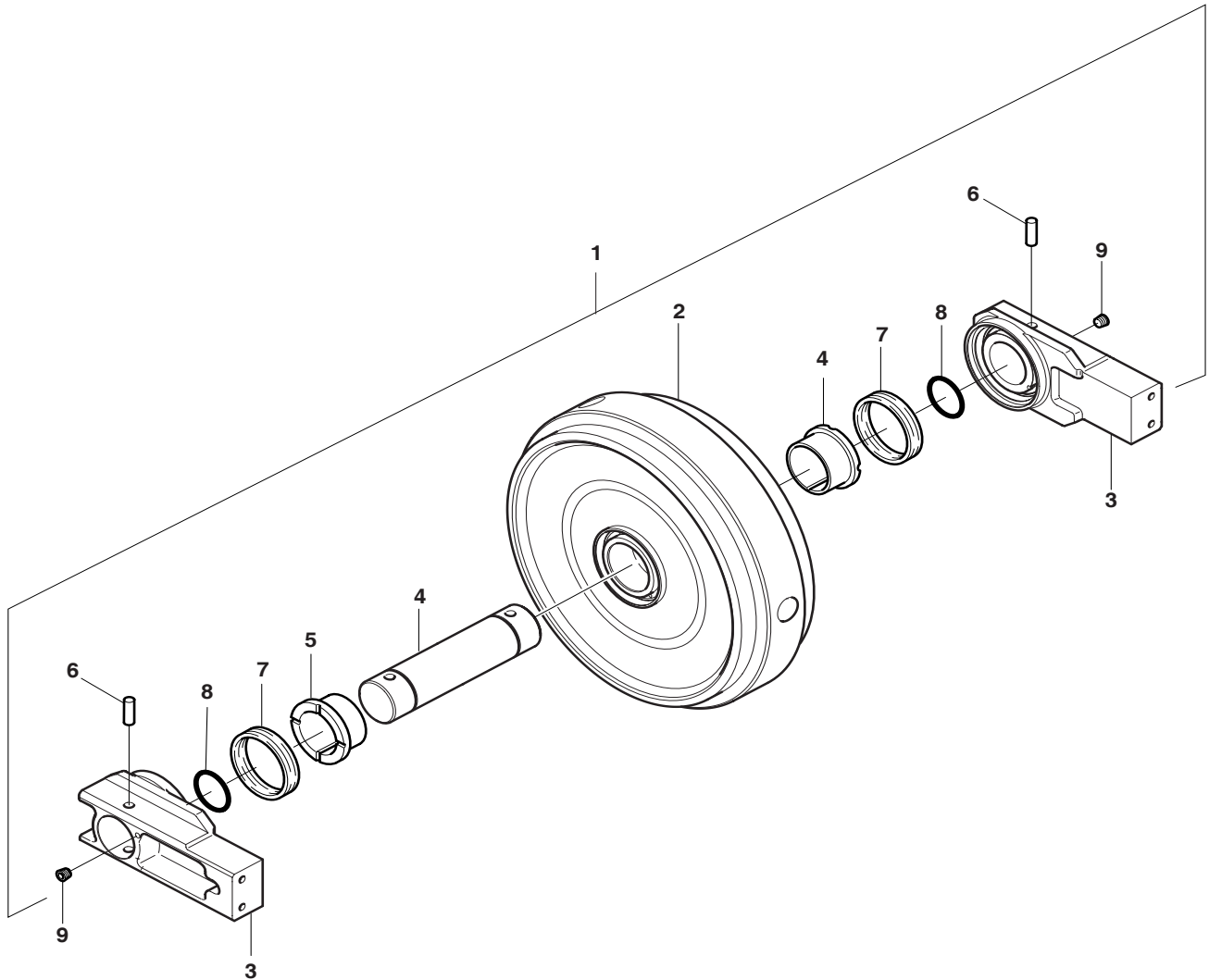
The tables that follow provide factory specified dimensional limits (as new condition, recommended service and replacement limit) for lower travel frame components.

Recommended maintenance to **replace** most listed components requires welding on additional material and grinding off excess. Some components must be replaced before the service limit is exceeded or no maintenance or renewal is possible.

Compare the values in the tables with dimensions and profiles shown in the adjacent figures.

# FRONT IDLER ROLLER

## Parts List



FG003913

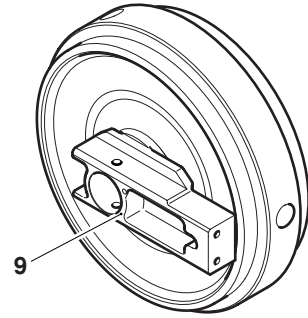
Figure 15

Reference Number	Description
1	Idler Assembly
2	Idler
3	Bearing
4	Shaft
5	Bushing

Reference Number	Description
6	Pin
7	Floating Seal
8	O-ring
9	Plug

## Front Idler Roller Disassembly

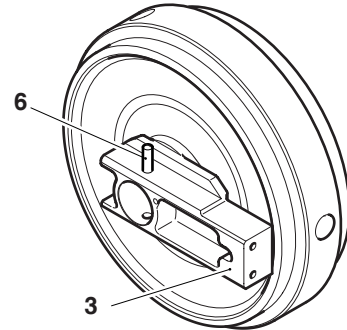
1. Remove plug (9, Figure 16) from idler assembly (1), and drain oil into a suitable container.



FG003914

**Figure 16**

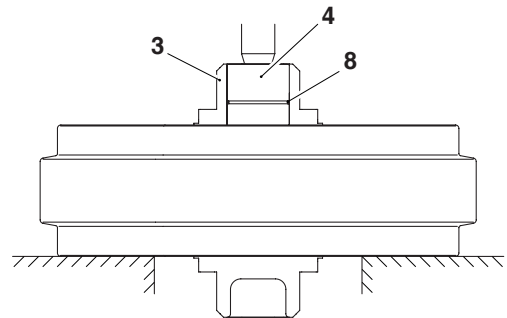
2. Separate the pin (6, Figure 17) from the bearing (3).



FG003915

**Figure 17**

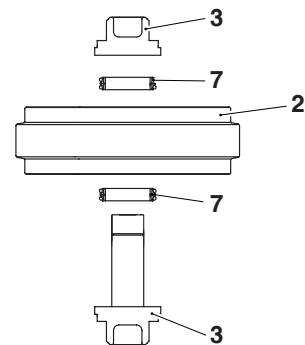
3. Use a press to remove bearing from the axle (4). Separate the O-ring (8, Figure 18) from the axle.



FG001482

**Figure 18**

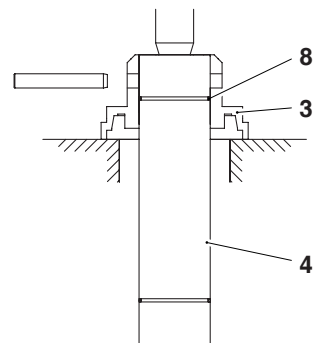
4. Remove the floating seal (7, Figure 19) from the idler (2) and bearing (3).



FG001483

**Figure 19**

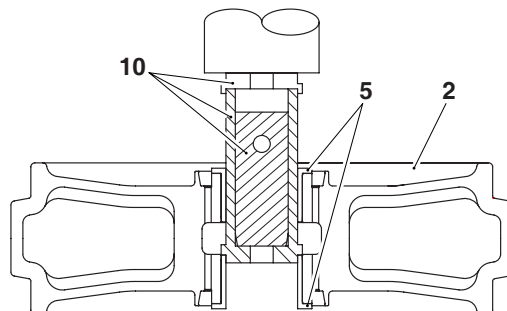
5. Use a press to separate the axle (4, Figure 20), O-ring (8) and bearing (3).



FG001484

**Figure 20**

6. Remove bushing (5, Figure 21) with the press and special tool (10, ST-1909).



FG001485

**Figure 21**



## Front Idler Roller Reassembly

1. Degrease, clean and dry all parts before reassembly. Insert bushing (5, Figure 21) into the idler (2).
2. Grease O-ring (8, Figure 22) and insert it into the axle.
3. Align the bearing (3, Figure 22) and axle (4) holes and pin (6) them together.

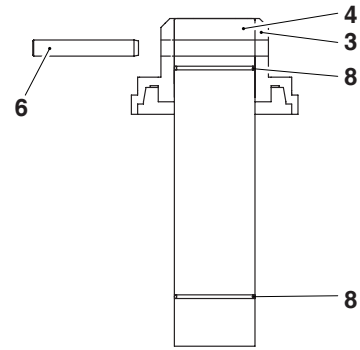


Figure 22

FG001486

4. Install floating seal (7, Figure 23) inside the idler (2) and bearing (3).

**NOTE:** Apply clean engine oil to the joint side of the floating seal. Apply grease to the floating seal O-ring.

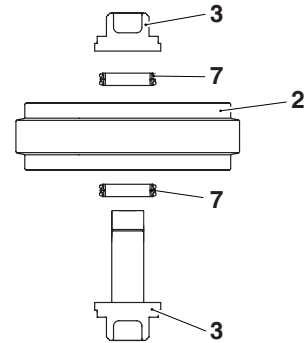


Figure 23

FG001483

5. Install idler (2, Figure 24) on the axle.
6. Install bearing (3, Figure 24) and pin (6) to the axle.

**NOTE:** Fill the idler assembly with new gear oil (ISO VG 220 EP/VI 130) with approximately 420 cc (14.2 oz).

7. Install plug (9, Figure 29) on the bearing.

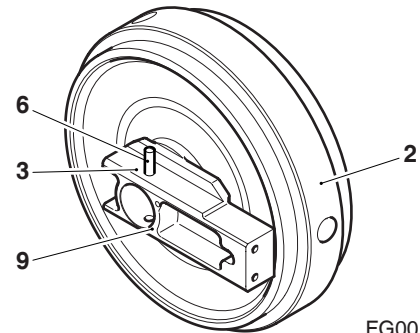
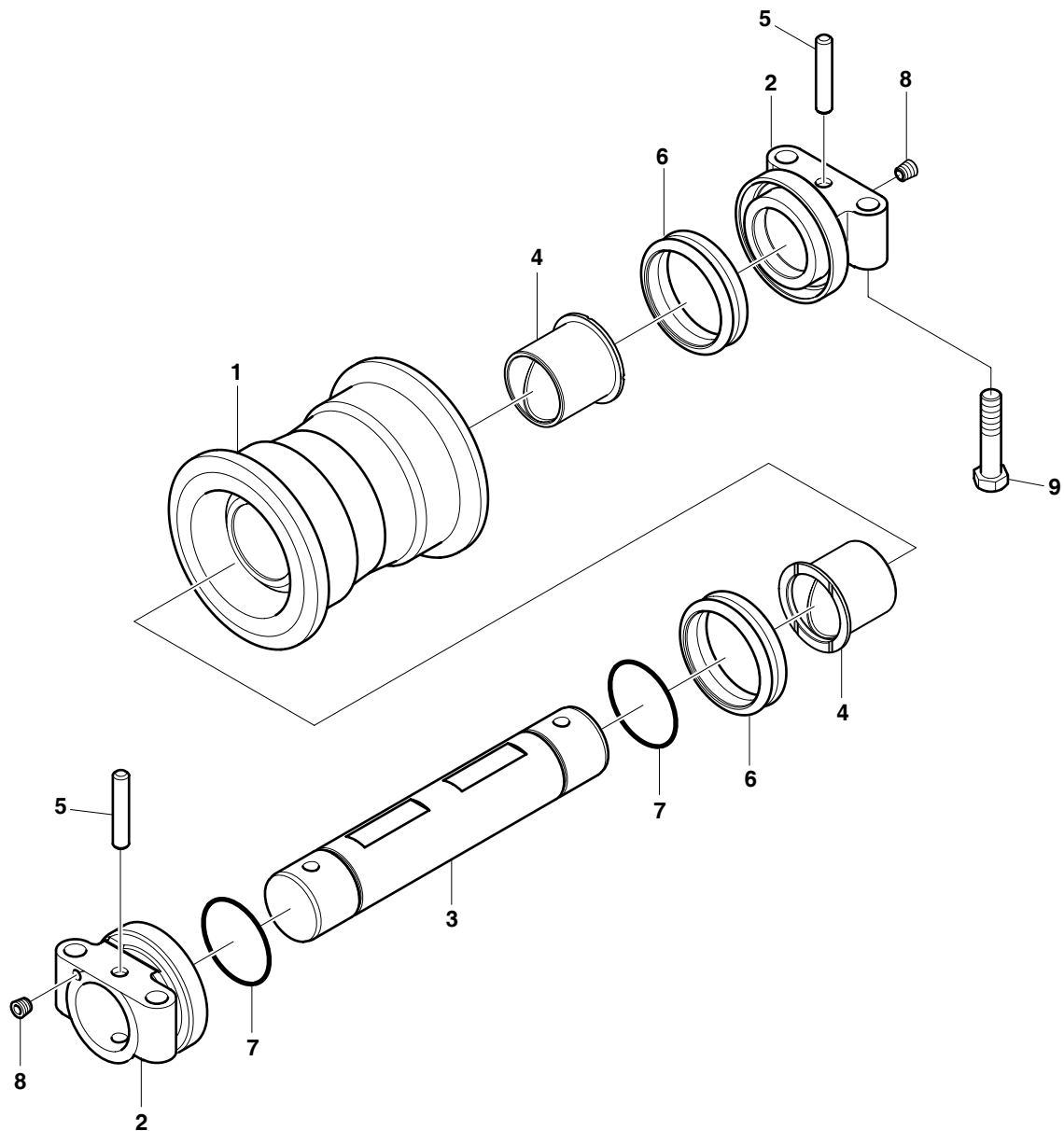


Figure 24

FG001488

# LOWER ROLLER

## Parts List



FG019395

Figure 25

Reference Number	Description
1	Roller
2	Collar
3	Shaft
4	Bushing
5	Pin

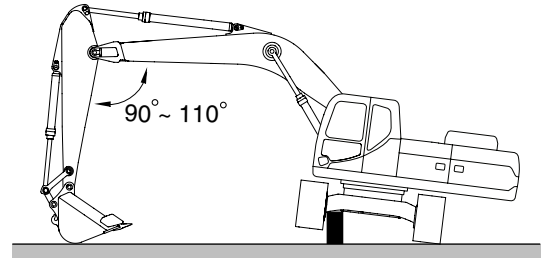
Reference Number	Description
6	Floating Seal
7	O-ring
8	Plug
9	Bolt

## Lower Roller Removal

1. Relieve track tension. Refer to "Track Tension" in this section for procedure.
2. Swing upper structure at 90° to frame.
3. Using bucket raise track off ground and place blocking under frame (Figure 26).
4. Remove four bolts and lower roller assembly from track frame. There is an alignment pin on each end of lower roller assembly.

**NOTE:** To gain access to some rollers the link guard may have to be removed. Remove four spring washers and bolts to remove guard.

**NOTE:** If additional track clearance is required, remove upper rollers before raising track.

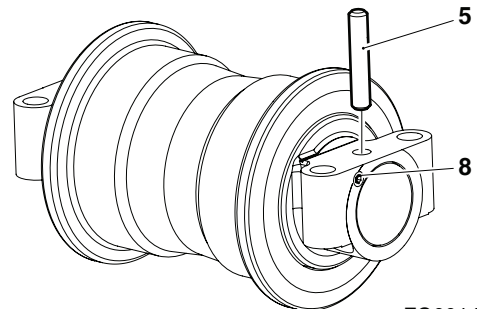


FG018383

Figure 26

## Lower Roller Disassembly

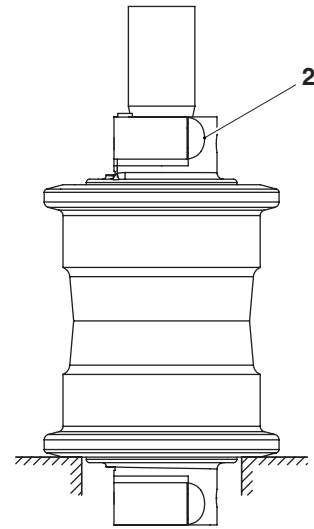
1. Remove plug (8, Figure 27) from the collar and drain oil.
2. Pull the pin (5, Figure 27) from the collar.



FG001489

Figure 27

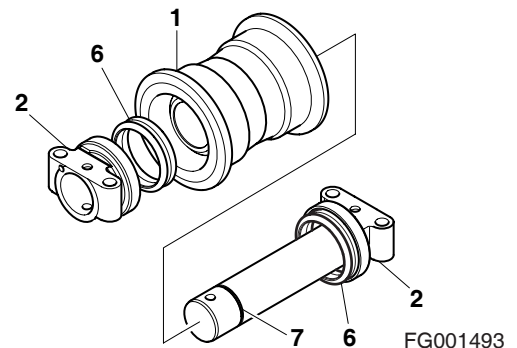
3. Separate the collar (2, Figure 28) from the axle, using press.



FG001490

Figure 28

4. Remove O-rings (7, Figure 29) from the axle.
5. Separate floating seals (6, Figure 29) from the collar and roller (1).
6. Remove collar (2, Figure 29) and O-rings (7) from the axle, using press.

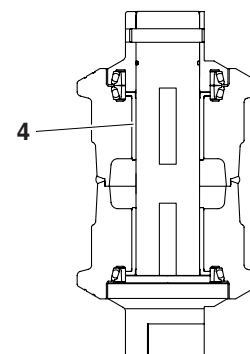


FG001493

Figure 29

## Lower Roller Reassembly

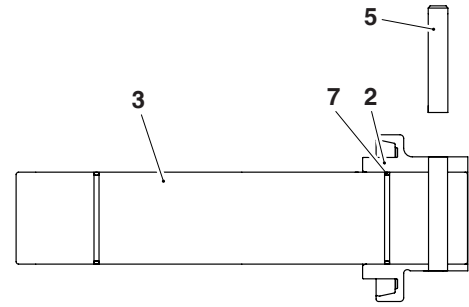
1. Degrease, clean and dry all parts before reassembly. Insert bushing (4, Figure 30) into roller.



FG019396

Figure 30

- Apply grease to the O-rings (7, Figure 31) and insert into axle.
- Align collar (2, Figure 31) and axle (3) pinholes and pin (5) the collar.



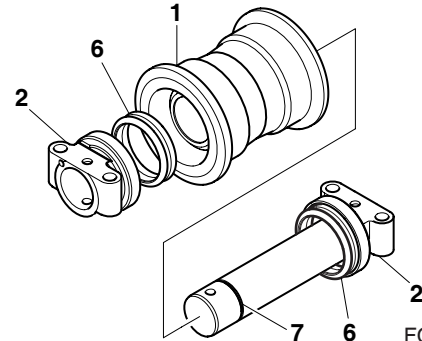
FG001492

Figure 31

- Insert floating seals (6, Figure 32) into the roller (1) and collar (2).

**NOTE:** Apply clean gear oil to the joint side of the floating seal. Apply grease to the floating seal O-ring.

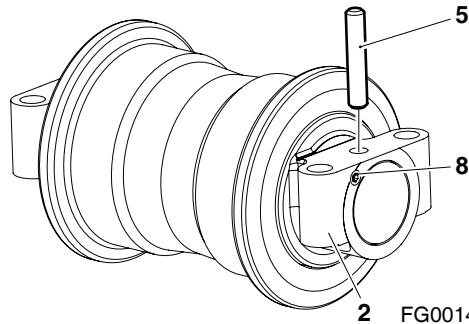
- Slide the axle inside the roller.



FG001493

Figure 32

- Install the collar (2, Figure 33), O-ring (7), and pin (5) on the remaining side.
- Fill with clean gear oil (ISO VG 220 EP/VI 130) with approximately 485 cc (16.4 oz).
- Install plug (8, Figure 33) on the collar.



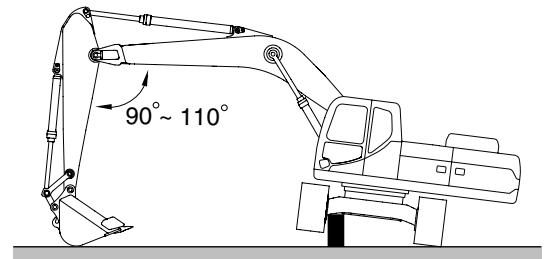
FG001487

Figure 33

## Lower Roller Installation

- Install four bolts to hold lower roller assembly to track frame.

**NOTE:** To gain access to some rollers a link guard may have to be removed. Remove four spring washers and bolts to remove guard.

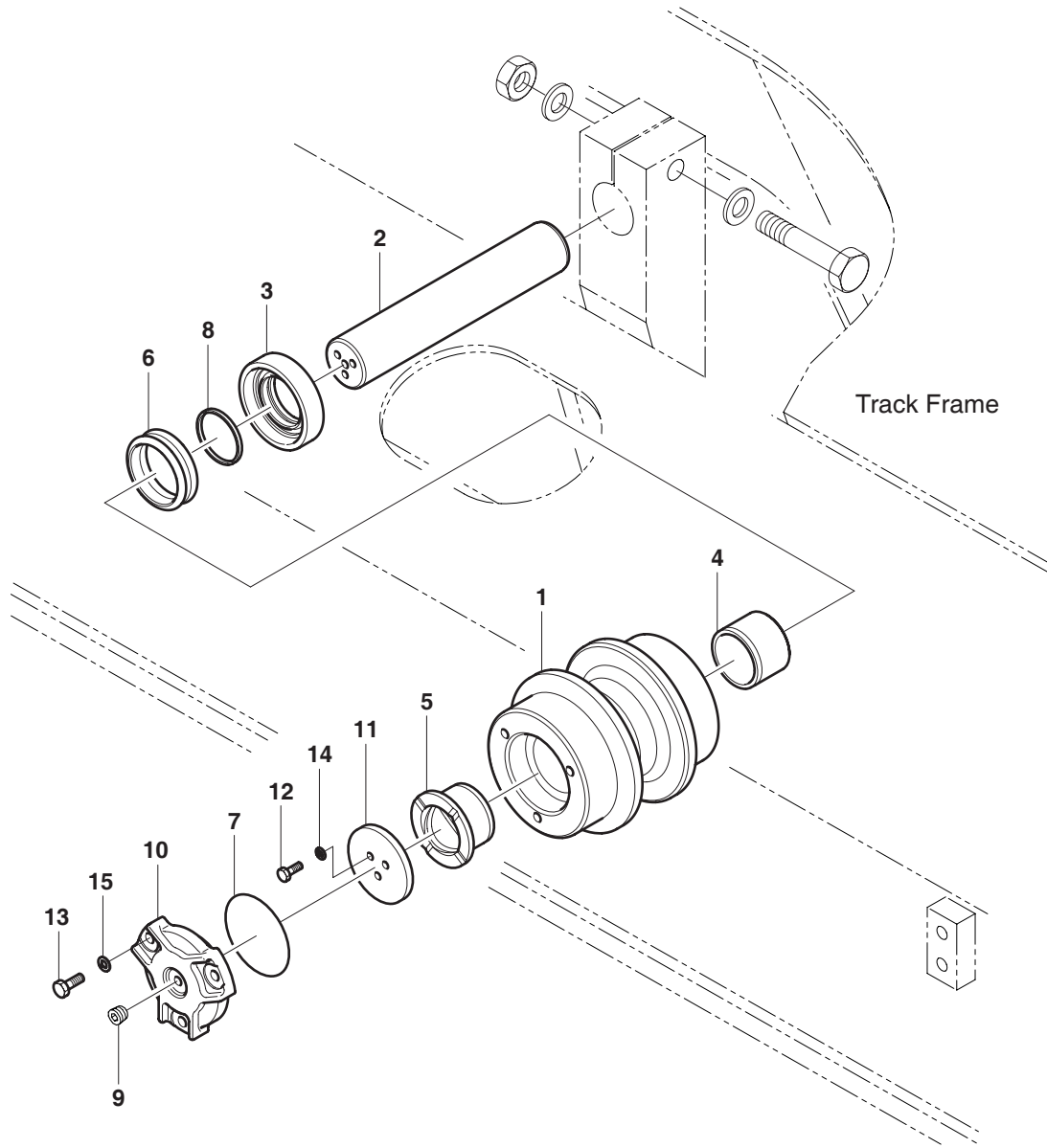


FG018383

Figure 34

# UPPER ROLLER

## Parts List



FG001141

Figure 35

Reference Number	Description
1	Roller
2	Shaft
3	Thrust Ring
4	Bushing
5	Bushing
6	Floating Seal
7	O-ring
8	O-ring

Reference Number	Description
9	Plug
10	Cover
11	Washer
12	Bolt
13	Blot
14	Spring Washer
15	Spring Washer

## Upper Roller Removal

1. Relieve track tension. This will allow track to be raised so links clear top of roller.
2. Position a bottle jack on top of track frame and apply pressure to track shoe.
3. Remove mounting hardware holding upper roller assembly to track frame.



## WARNING

### AVOID DEATH OR SERIOUS INJURY

The track adjusting mechanism is under very high-pressure. **NEVER** release grease pressure too fast. The track tension grease valve should never be loosened more than one (1) complete turn from the fully tightened down position. Bleed off grease pressure slowly. Keep your body away from the valve always. Always wear eye and face protection when adjusting track tension.

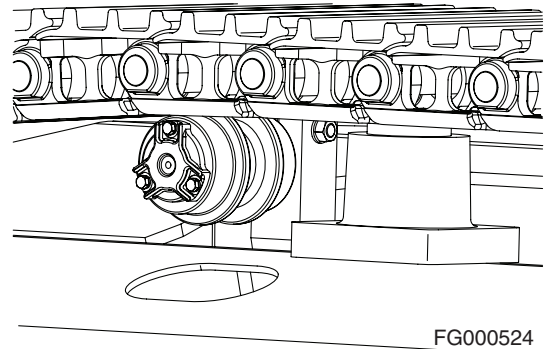


Figure 36

## Upper Roller Disassembly

1. Remove plug (9, Figure 37) from the cover and drain oil.

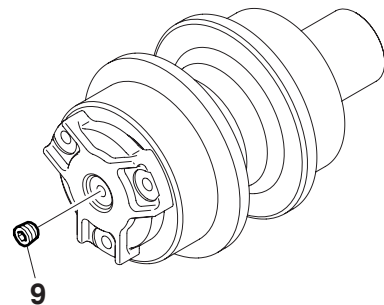
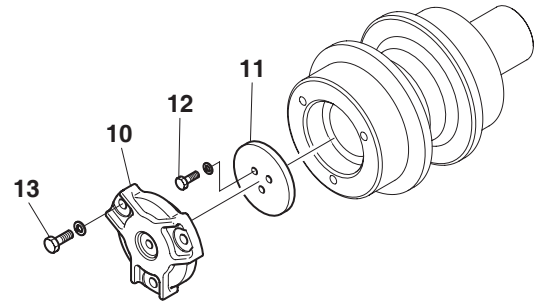


Figure 37

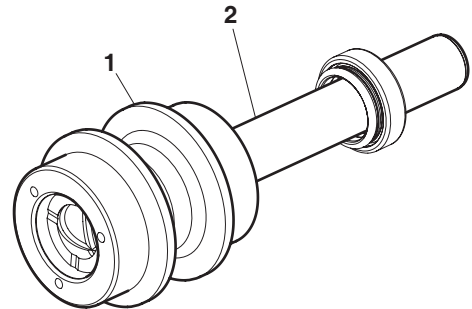
- Remove bolts (13, Figure 38) and cover (10). Detach bolts (12) and washer (11).



FG001495

**Figure 38**

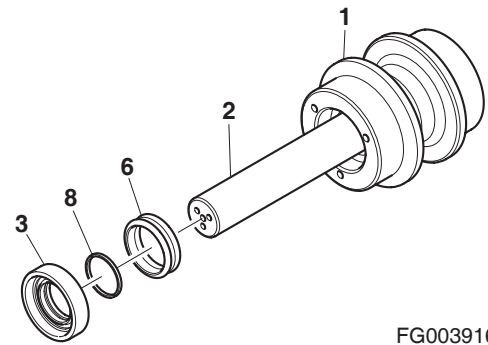
- Separate the roller (1, Figure 39) from the axle (2).



FG001497

**Figure 39**

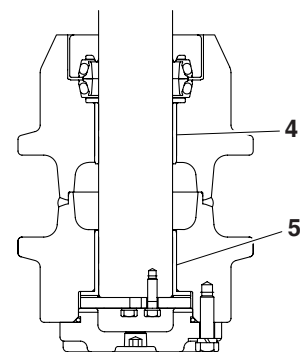
- Separate the floating seal (6, Figure 40) from the roller.
- Separate the O-ring (8) and thrust ring (3) from the axle.



FG003916

**Figure 40**

- Separate the bushing (4 and 5, Figure 41) from the roller with a press and special tool (ST-1919).



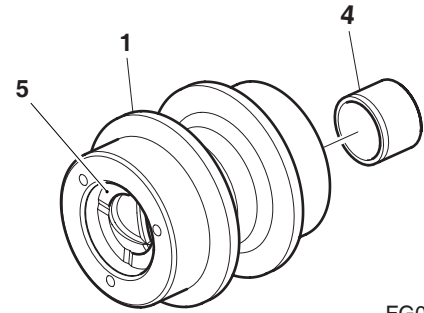
FG019397

**Figure 41**



## Upper Roller Reassembly

1. Degrease, clean and dry all parts before reassembly. Insert bushing (4 and 5, Figure 42) into the roller (1).



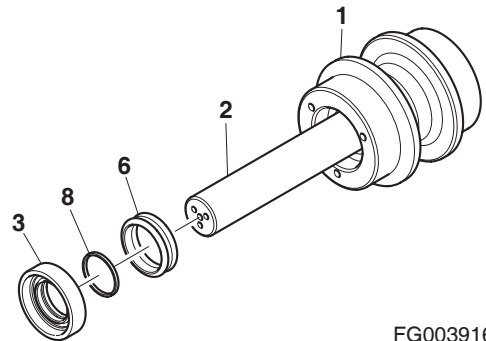
FG003917

Figure 42

2. Insert floating seal (6, Figure 43) into the roller (1) and bushing.

**NOTE:** Apply clean engine oil to the joint side of the floating seal. Apply grease to the floating seal O-ring.

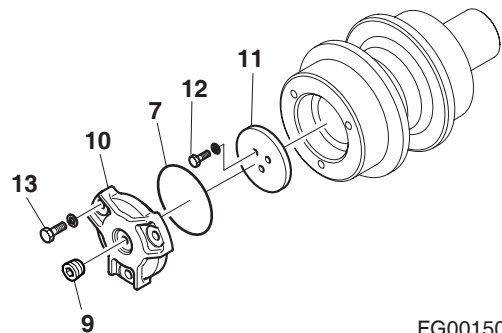
3. Install the axle (2), O-ring (8) and thrust ring (3).



FG003916

Figure 43

4. Install washer (11, Figure 44) and bolt (12).
5. Insert the O-ring (7, Figure 44) to the cover (10). Attach cover (10) and bolt (13) to the roller.
6. Fill with engine oil with 200 cc (6.8 oz).
7. Tighten plug (9, Figure 44).



FG001501

Figure 44



**Download the full PDF manual instantly.**

**Our customer service e-mail:**

**[aservicemanualpdf@yahoo.com](mailto:aservicemanualpdf@yahoo.com)**