

**CX80C**  
Crawler Excavator

**SERVICE MANUAL**

Part number 48098410

English

May 2017

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**CASE**  
CONSTRUCTION



## **SERVICE MANUAL**

**CX80C Crawler Excavators standard version (TIER 3)**  
**CX80C Crawler Excavators standard with blade version (TIER 3)**

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## **INTRODUCTION**

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## **Foreword - Important notice regarding equipment servicing**

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your CASE CONSTRUCTION Sales and Service Networks.

## Safety rules


### Personal safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

**FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.**

### Machine safety

**NOTICE:** Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

### Information

**NOTE:** Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

## **Safety rules - General information**

### **Cleaning**

Clean the metal parts with cleaning solution that meets the standard and steam cleaning. (except for bearings)

After cleaning, dry well, and inject oil in all parts.

Also inject oil into the bearings after drying.

### **Inspection**

When disassembling parts, check all the parts.

If there are any worn or damaged parts, replace them.

Inspect carefully to prevent initial breakdowns.

### **Bearing**

Replace any loose bearings.

Air dry bearings before installing them.

### **Needle bearing**

When inserting needle bearings, be very careful not to damage them.

Apply grease to the section where the needle bearing will be inserted.

### **Gear**

Check that there is no wear and no damage.

### **Oil seal, O-ring, gasket**

Always install new oil seals, O-rings, and gaskets.

Apply grease to sections where oil seals and O-rings will be inserted.

### **Shaft**

Check that there is no wear and no damage.

Check the bearings and check for damaged oil seals on the shaft.

### **Service parts**

Install CASE CONSTRUCTION genuine service parts.

When placing an order, check the parts catalog. It contains the CASE CONSTRUCTION genuine part numbers.

Any breakdowns arising from the installation of non-genuine parts are not covered by the warranty.

### **Lubricants (fuel, hydraulic oil)**

Use the oil from the specified company or specified in the operator's manual or service Manual.

Any breakdowns arising from any fuel or hydraulic oil other than those specified are not covered by the warranty.

## Safety rules - Personal safety

### Preliminary warnings to maintenance operation

#### **⚠ WARNING**

**Avoid injury!**  
Do not operate the machine while under the influence of alcohol or drugs.  
Failure to comply could result in death or serious injury.

W0160A

#### **⚠ WARNING**

**Avoid injury!**  
Shut off the engine, remove the key, and make sure all machine motion stops before you service the machine.  
Failure to comply could result in death or serious injury.

W1128B

#### **⚠ WARNING**

**Improper operation or service of this machine can result in an accident.**  
Assign a supervisor to direct worksite operations. Agree on all safety measures, procedures, and suitable hand signals.  
Failure to comply could result in death or serious injury.

W0287A

#### **⚠ CAUTION**

**Pinch hazard!**  
Always use suitable tools to align mating parts. **DO NOT** use your hand or fingers.  
Failure to comply could result in minor or moderate injury.

C0044A

**NOTICE:** *never operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear the alert signals.*

### Personal Protective Equipment (PPE)

#### **⚠ WARNING**

**Avoid injury!**  
Use Personal Protective Equipment (PPE), including protective goggles, gloves, and safety footwear.  
Failure to comply could result in death or serious injury.

W1036A

### Lifting operation

#### **⚠ WARNING**

**Crushing hazard!**  
The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow. Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.  
Failure to comply could result in death or serious injury.

W0256A

#### **⚠ WARNING**

**Heavy objects!**  
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.  
Failure to comply could result in death or serious injury.

W0398A

**⚠ WARNING**

Improper operation or service of this machine can result in an accident.  
Raised equipment or machine movement without an operator can cause serious injury. Always do the following before performing any maintenance:  
Park the machine on flat, level ground.  
Lower the attachment to the ground.  
Shut down the engine and remove the ignition key.  
Lock the tracks.  
Failure to comply could result in death or serious injury.

W0944D

**⚠ WARNING**

Tip-over hazard!  
Only raise the track as little as necessary.  
Failure to comply could result in death or serious injury.

W0276A

**Engine**

**⚠ DANGER**

Avoid injury!  
Starting in gear can cause death. Start the engine only from the operator's seat with the transmission control(s) in neutral.  
Failure to comply will result in death or serious injury.

D0114A

**⚠ WARNING**

Inhalation/asphyxiation hazard!  
Never operate the engine in a closed building or area. Proper ventilation is required under all circumstances.  
Failure to comply could result in death or serious injury.

W0303A

**⚠ WARNING**

Hazard to bystanders!  
Make sure the area surrounding the machine is clear of all persons before starting the engine.  
Failure to comply could result in death or serious injury.

W0090A

**⚠ WARNING**

Hot surface possible!  
Wait for all components to cool before performing any operation.  
Failure to comply could result in death or serious injury.

W0251A

**NOTICE:** be sure to secure the engine solidly to prevent injury or damage to parts due to the engine falling during work on the engine.

**NOTICE:** check before starting the engine that any tools or shop rags used during maintenance have been removed from the area.

**Mechanical components**

**⚠ WARNING**

Entanglement hazard!  
Always keep hair and clothing away from moving parts. Do not wear loose clothing, jewelry, or other items that could entangle with moving parts and/or levers.  
Failure to comply could result in death or serious injury.

W0445A

**⚠ WARNING**

**Flying objects!**

Do not use the implement at a higher Power Take-Off (PTO) RPM than recommended. Machine damage due to vibration may occur, resulting in loose parts and flying debris.  
Failure to comply could result in death or serious injury.

W0192A

**Battery and electrical system**

**⚠ WARNING**

**Explosive gas!**

Batteries emit explosive hydrogen gas and other fumes while charging. Ventilate the charging area. Keep the battery away from sparks, open flames, and other ignition sources. Never charge a frozen battery.  
Failure to comply could result in death or serious injury.

W0005A

**⚠ WARNING**

**Battery acid causes burns. Batteries contain sulfuric acid.**

Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.  
Failure to comply could result in death or serious injury.

W0111A

**⚠ WARNING**

**Battery gas can explode!**

To prevent an explosion: 1. Always disconnect the negative (-) battery cable first. 2. Always connect the negative (-) battery cable last. 3. Do not short circuit the battery posts with metal objects. 4. Do not weld, grind, or smoke near a battery.  
Failure to comply could result in death or serious injury.

W0011A

**NOTICE:** never check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.

**NOTICE:** check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors. Always keep the connectors and terminals clean.

**Hydraulic system**

**⚠ WARNING**

**Burn hazard!**

Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F).  
Failure to comply could result in death or serious injury.

W0241A

**⚠ WARNING**

**Pressurized fluid can penetrate the skin and cause severe injuries.**

The grease in the cylinder is under high pressure. Never loosen the grease fitting adaptor completely in order to speed up the flow of grease.  
Failure to comply could result in death or serious injury.

W0261A

**⚠ WARNING**

**Pressurized system!**

Before attempting any service procedure, it is your responsibility to know the number of accumulators on the machine, and the correct procedure for releasing the pressure of each accumulator.

Failure to comply could result in death or serious injury.

W0136A

**Fluids**

**⚠ WARNING**

**Hazardous chemicals!**

Coolant can be toxic. Avoid contact with skin, eyes, and clothing. Antidotes:

**EXTERNAL** - Rinse thoroughly with water. Remove soiled clothing.

**INTERNAL** - Rinse the mouth with water. **DO NOT** induce vomiting. Seek immediate medical attention.

**EYES** - Flush with water. Seek immediate medical attention.

Failure to comply could result in death or serious injury.

W0282A

**⚠ WARNING**

**Burn hazard!**

Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released.

Failure to comply could result in death or serious injury.

W0367A

**⚠ WARNING**

**Escaping fluid!**

Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Failure to comply could result in death or serious injury.

W0178A

**⚠ WARNING**

**Chemical hazard!**

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

W0371A

**⚠ WARNING**

**Pressurized hydraulic fluid can penetrate the skin and cause severe injuries.**

Tighten all of the connections before starting the engine. If hydraulic fluid has penetrated the skin, seek medical assistance immediately.

Failure to comply could result in death or serious injury.

W0117A

**⚠ WARNING**

Fuel vapors are explosive and flammable.  
Do not smoke while handling fuel. Keep fuel away from flames or sparks. Shut off engine and remove key before servicing. Always work in a well-ventilated area. Clean up spilled fuel immediately.  
Failure to comply could result in death or serious injury.

W0904A

**⚠ WARNING**

Fire hazard!  
When handling diesel fuel, observe the following precautions:  
1. Do not smoke.  
2. Never fill the tank when the engine is running.  
3. Wipe up spilled fuel immediately.  
Failure to comply could result in death or serious injury.

W0999A

**⚠ WARNING**

Explosion hazard!  
If battery electrolyte is frozen, attempting to charge the battery or jump-start the engine can cause the battery to explode. Always keep batteries at full charge to prevent frozen battery electrolyte. Never charge a frozen battery.  
Failure to comply could result in death or serious injury.

W0203A

**⚠ WARNING**

Fire hazard!  
Do not add gasoline, alcohol, or blended fuels to diesel fuel, except as recommended in this manual. Fuel combinations may increase fire and explosion hazards.  
Failure to comply could result in death or serious injury.

W0401A

**⚠ WARNING**

Explosion hazard!  
Starting fluid (ether) is flammable. Do not store the starting fluid container in the operator's compartment. Remove the container when temperatures are above 5 °C (40 °F). Wear rubber gloves when handling the container. Do not breathe starting fluid (ether) vapors. Store in a cool place.  
Failure to comply could result in death or serious injury.

W0472A

**⚠ CAUTION**

Escaping fluid!  
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.  
Failure to comply could result in minor or moderate injury.

C0104A

**⚠ CAUTION**

Burn hazard!  
Do not remove the radiator cap. Check the coolant level in the recovery tank.  
Failure to comply could result in minor or moderate injury.

C0113A

**NOTICE:** *never overfill the fuel tank.*



## INTRODUCTION

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**NOTICE:** *never remove the fuel cap with the engine running.*

**NOTICE:** *never use diesel fuel as a cleaning agent.*

**NOTICE:** *be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.*

**NOTICE:** *never place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.*

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## Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

### Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

### Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. CASE CONSTRUCTION strongly recommends that you return all used batteries to a CASE CONSTRUCTION dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



### Mandatory battery recycling

**NOTE:** The following requirements are mandatory in Brazil.

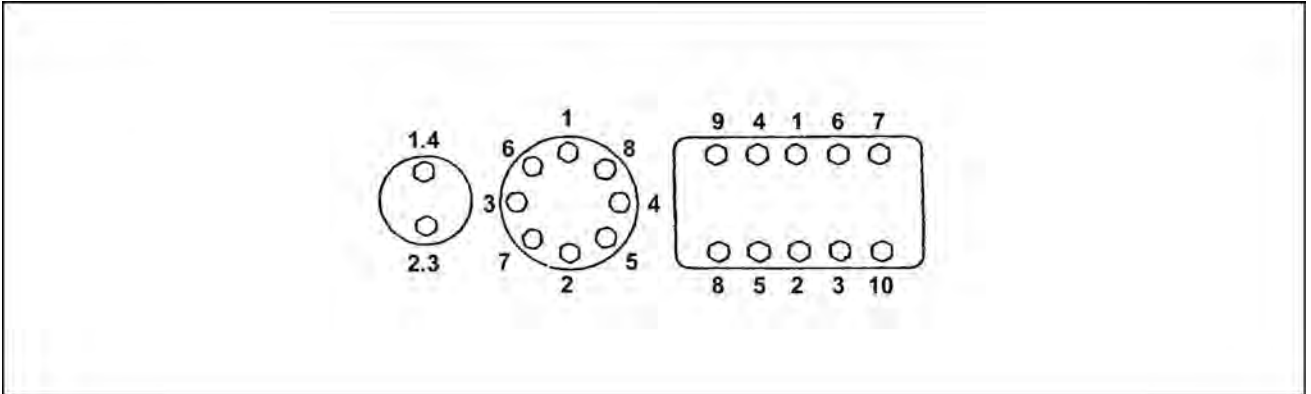
Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

## Torque - Bolt and nut

- Tighten alternating between left and right and top and bottom so that uniform tightening force is applied.



LPIL12CX00005EA 1

- If **LOCTITE®** was used on a removed bolt (there is something white sticking to the bolt when it is removed), clean the old **LOCTITE®** off with cleaning fluid, dry the bolt, then apply 2 - 3 drops of **LOCTITE®** to the thread section of the bolt.

### Torque table

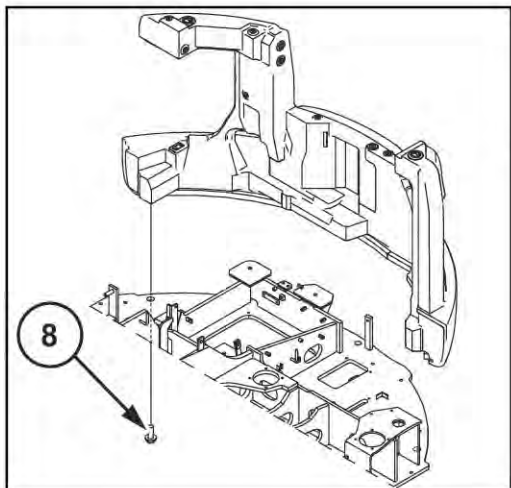
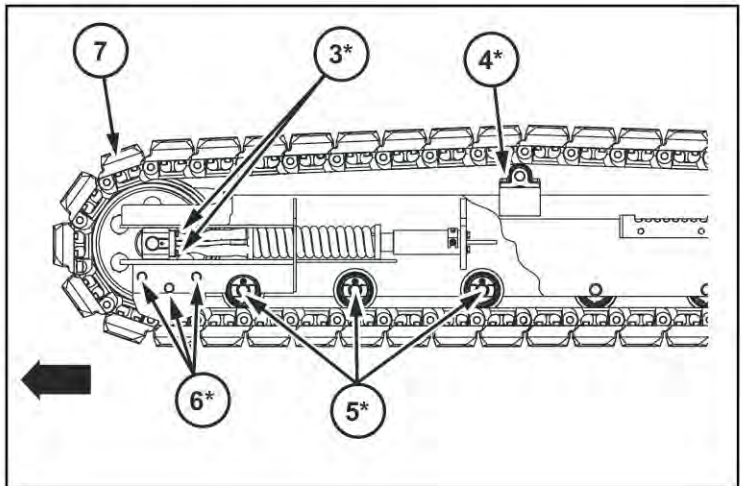
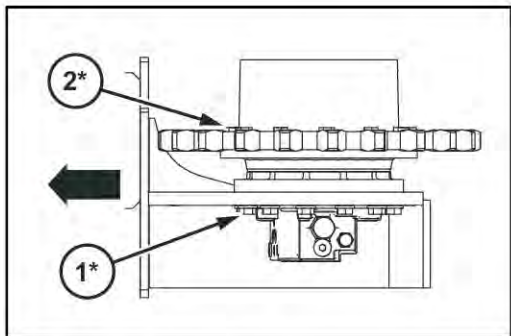
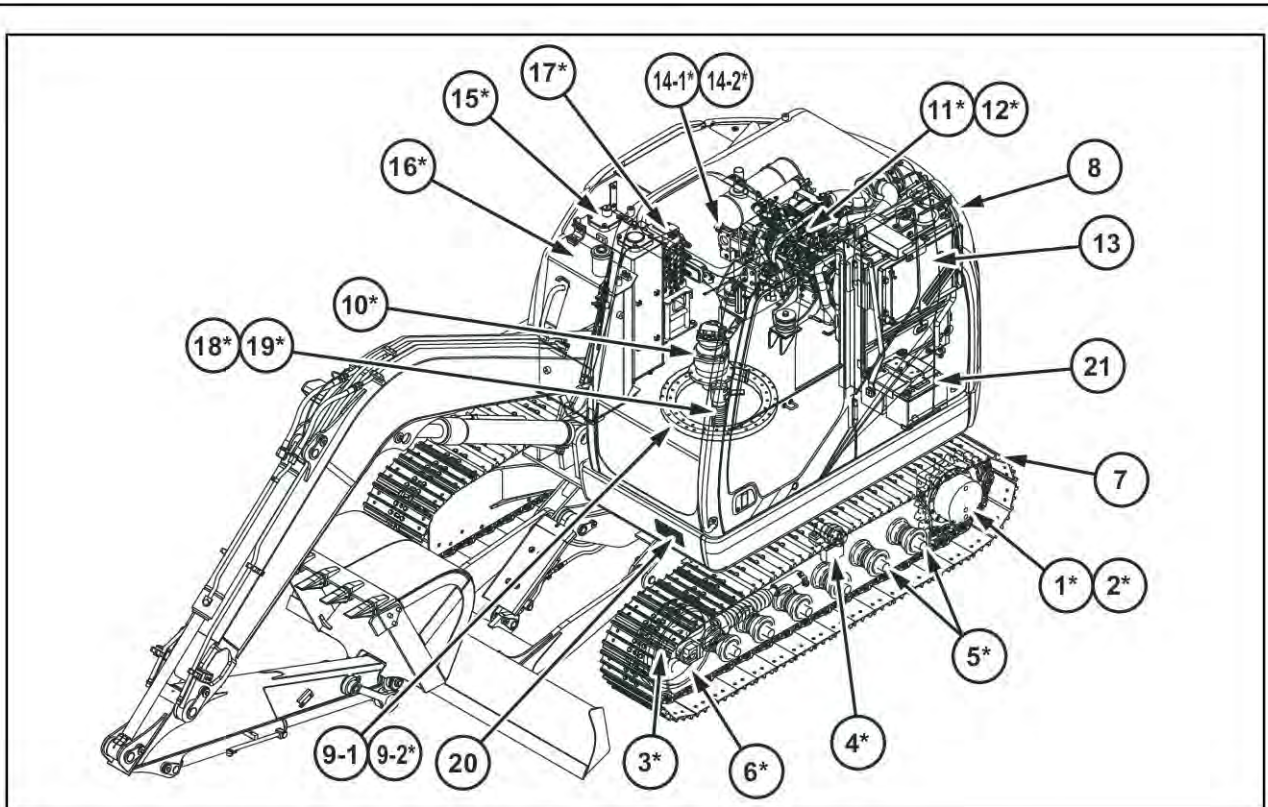
Bolt nominal diameter (size)		M6	M8	M10	M12	M14	M16	M18	M20
Hexagon bolt	Wrench	10 mm	13 mm	17 mm	19 mm	22 mm	24 mm	27 mm	30 mm
	Tightening torque	6.9 N·m (5.089 lb ft)	19.6 N·m (14.456 lb ft)	39.2 N·m (28.912 lb ft)	58.8 N·m (43.369 lb ft)	98.1 N·m (72.355 lb ft)	156.9 N·m (115.72 lb ft)	196.1 N·m (144.63 lb ft)	294.2 N·m (216.99 lb ft)
Hexagon socket head bolt	Wrench	5 mm	6 mm	8 mm	10 mm	12 mm	14 mm	14 mm	17 mm
	Tightening torque	8.8 N·m (6.491 lb ft)	21.6 N·m (15.931 lb ft)	42.1 N·m (31.051 lb ft)	78.5 N·m (57.899 lb ft)	117.7 N·m (86.811 lb ft)	176.5 N·m (130.18 lb ft)	245.2 N·m (180.85 lb ft)	343.2 N·m (253.13 lb ft)

## Torque - Special torque settings

Code	Retightening location		Bolt nominal diameter	Wrench	Tightening torque
1*	Travel motor		M16	24 mm	267 – 312 N·m (196.93 – 230.12 lb ft)
2*	Drive sprocket		M14	22 mm	173 – 202 N·m (127.60 – 148.99 lb ft)
3*	Take-up roller		M10	17 mm	63 – 73 N·m (46.47 – 53.84 lb ft)
4*	Upper roller		M16	24 mm	267 – 312 N·m (196.93 – 230.12 lb ft)
5*	Lower roller		M20	30 mm	521 – 608 N·m (384.27 – 448.44 lb ft)
6*	Front guard		M16	24 mm	267 – 312 N·m (196.93 – 230.12 lb ft)
7	Shoe		M14	22 mm	220 – 270 N·m (162.26 – 199.14 lb ft)
8	Counterweight		M24	36 mm	850.2 – 992.4 N·m (627.08 – 731.96 lb ft)
9-1	Turntable bearing	Upper side	M16	24 mm	252 – 283 N·m (185.87 – 208.73 lb ft)
9-2*		Lower side	M16	24 mm	252 – 283 N·m (185.87 – 208.73 lb ft)
10*	Swing unit		M16	24 mm	272.6 – 317.7 N·m (201.06 – 234.32 lb ft)
11*	Engine	Mount	M16	24 mm	264.9 – 313.9 N·m (195.38 – 231.52 lb ft)
12*		Bracket	M10	17 mm	63.8 – 73.6 N·m (47.06 – 54.28 lb ft)
13	Radiator		M12	19 mm	63.8 – 73.6 N·m (47.06 – 54.28 lb ft)
14-1*	Hydraulic pump	Pump	M12	10 mm hexagon socket head	64.2 – 74.0 N·m (47.351 – 54.580 lb ft)
14-2*		Flange	M10	17 mm	62.8 – 72.6 N·m (46.319 – 53.547 lb ft)
15*	Hydraulic tank		M12	19 mm	98.1 – 107.9 N·m (72.35 – 79.58 lb ft)
16*	Fuel tank		M12	19 mm	98.1 – 107.9 N·m (72.35 – 79.58 lb ft)
17*	Control valve		M12	19 mm	–
18*	Center joint	Lock bar	M12	19 mm	88.3 – 107 N·m (65.13 – 78.92 lb ft)
19		Joint	M12	19 mm	109 – 127 N·m (80.39 – 93.67 lb ft)
20	Cab		M16	24 mm	149 – 173 N·m (109.90 – 127.60 lb ft)
21	Battery		M10	17 mm	8 – 10 N·m (5.90 – 7.38 lb ft)

**NOTICE:** For items marked with \*, always apply **LOCTITE® 262™** or the equivalent and tighten to the specified torque. The tightening torque in kgf·m is determined with  $N \cdot m \div 9.8$  (  $lbf \cdot ft \div 7.2$  ).

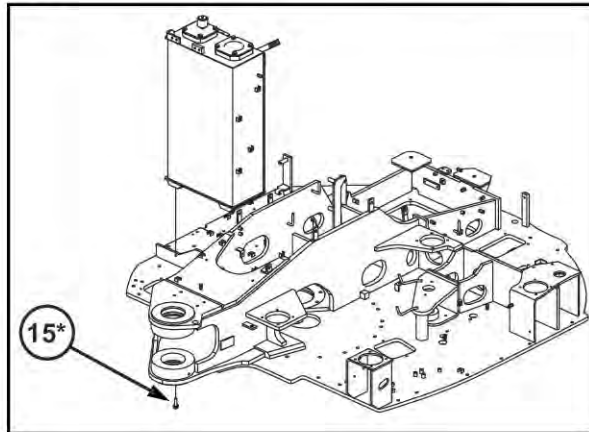
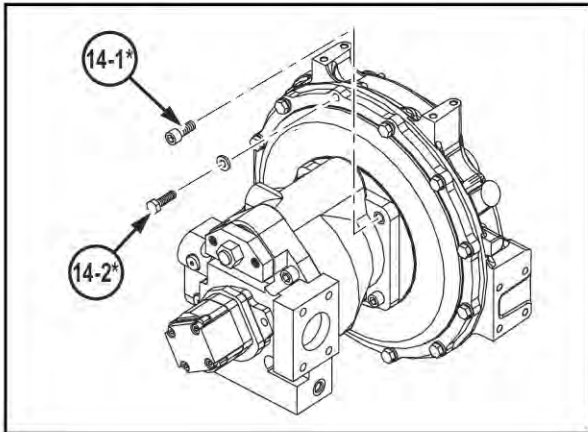
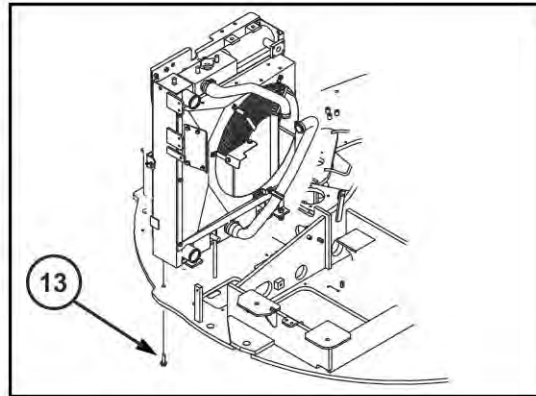
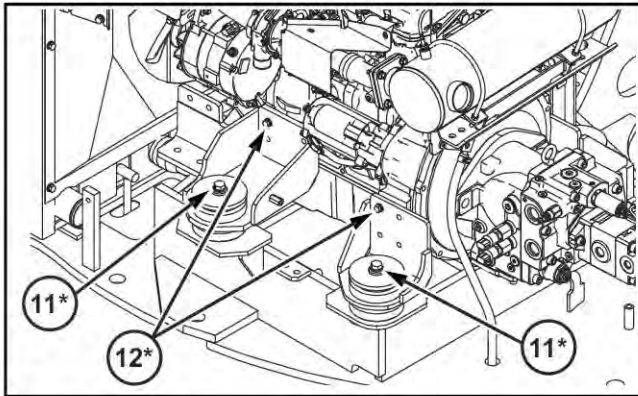
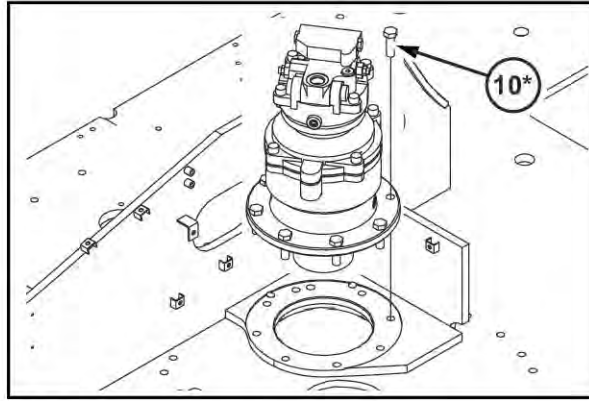
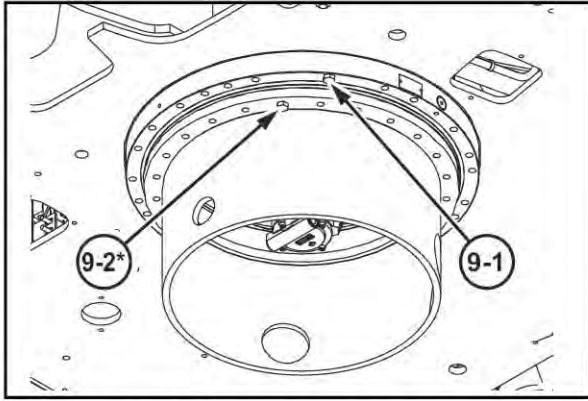
INTRODUCTION



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INTRODUCTION



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