CX80C
Crawler Excavator

SERVICE MANUAL

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CASE CONSTRUCTION

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SERVICE MANUAL

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

Contents

INTRODUCTION

Contents

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(*) See content for specific models

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.

W0099A

⚠ 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.*

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.*

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.*

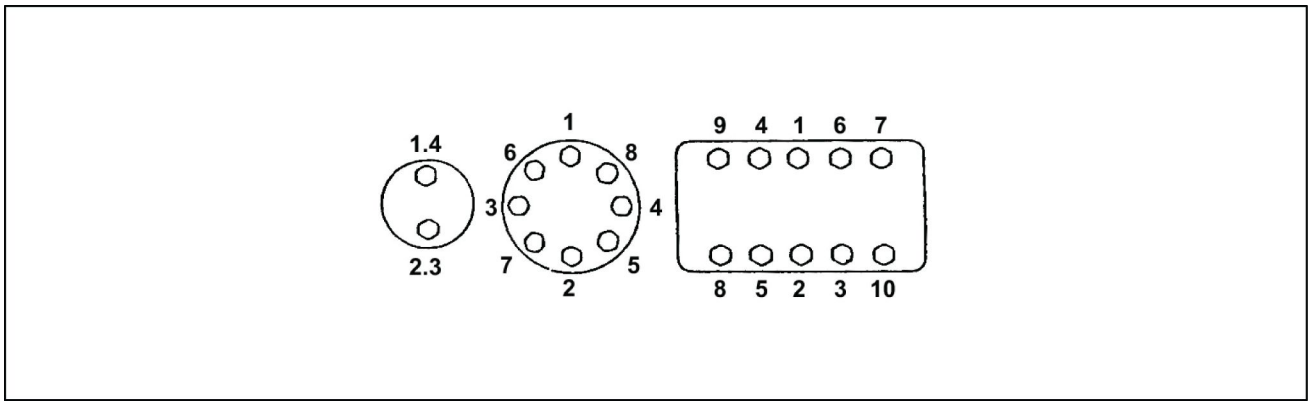
Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

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.



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- 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.

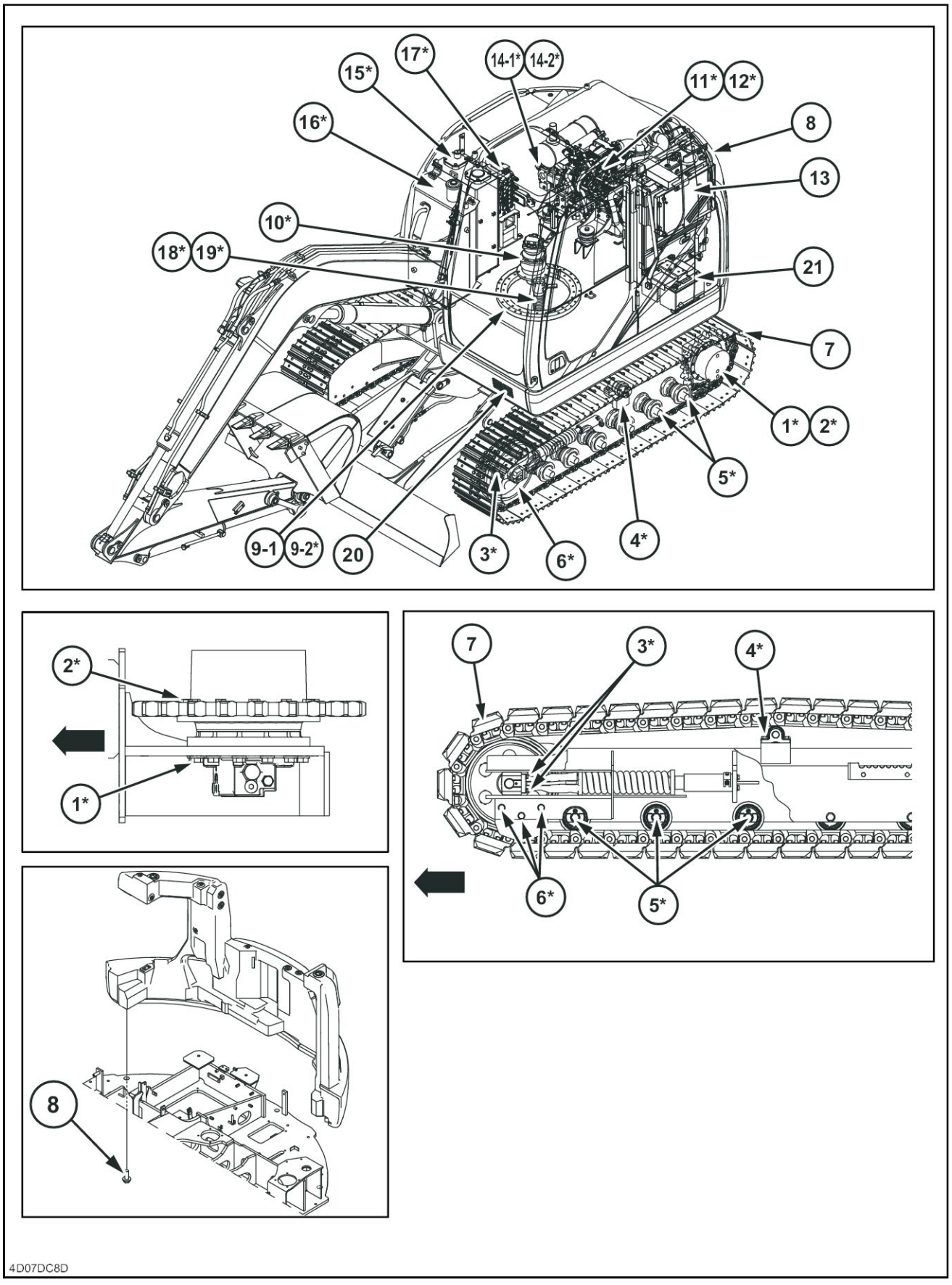
Torque table

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 (115.723 lb ft)	196.1 N·m (144.636 lb ft)	294.2 N·m (216.991 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 (130.180 lb ft)	245.2 N·m (180.850 lb ft)	343.2 N·m (253.131 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 · m ÷ 9.8 (lbf · ft ÷ 7.2).*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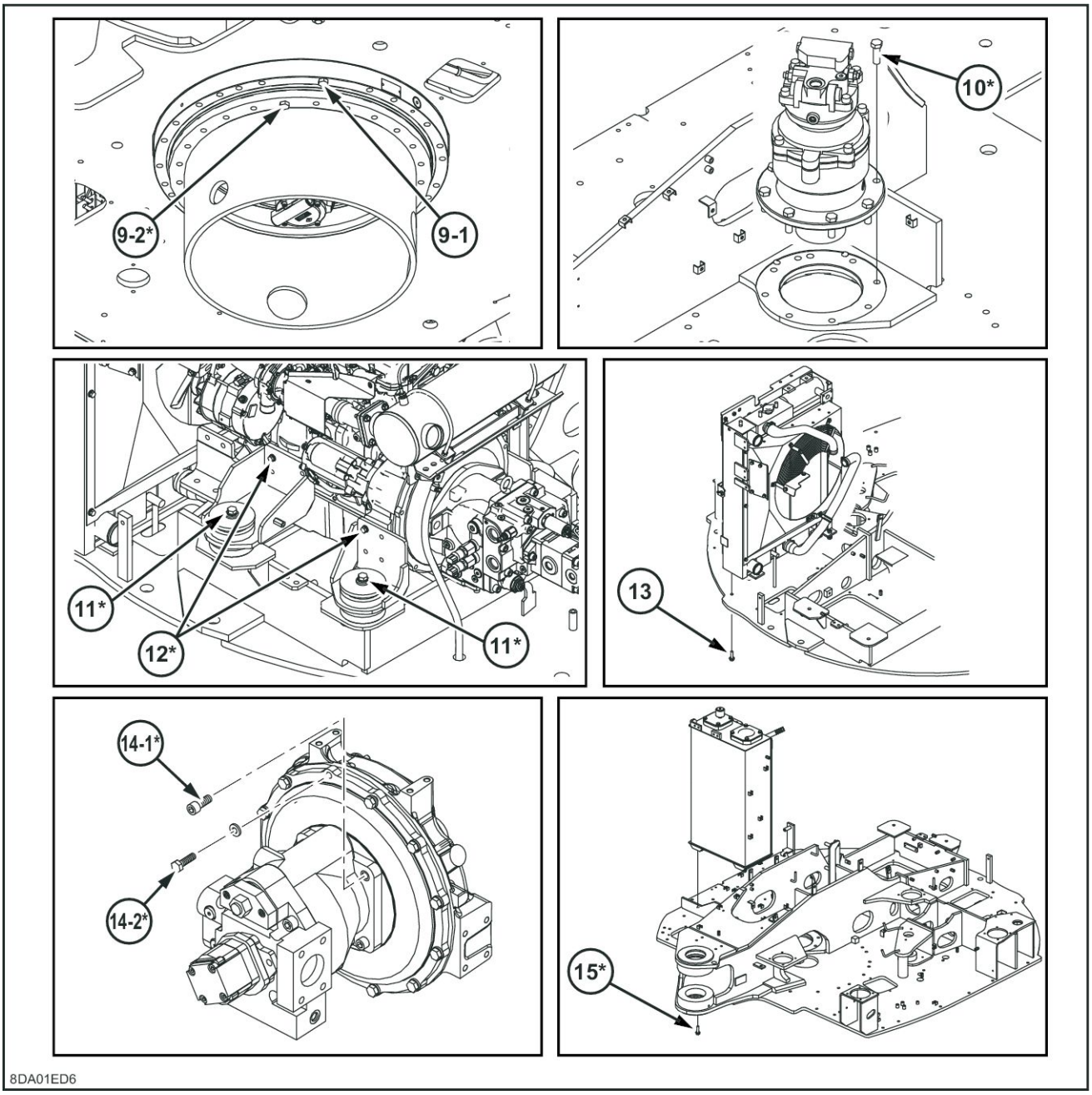

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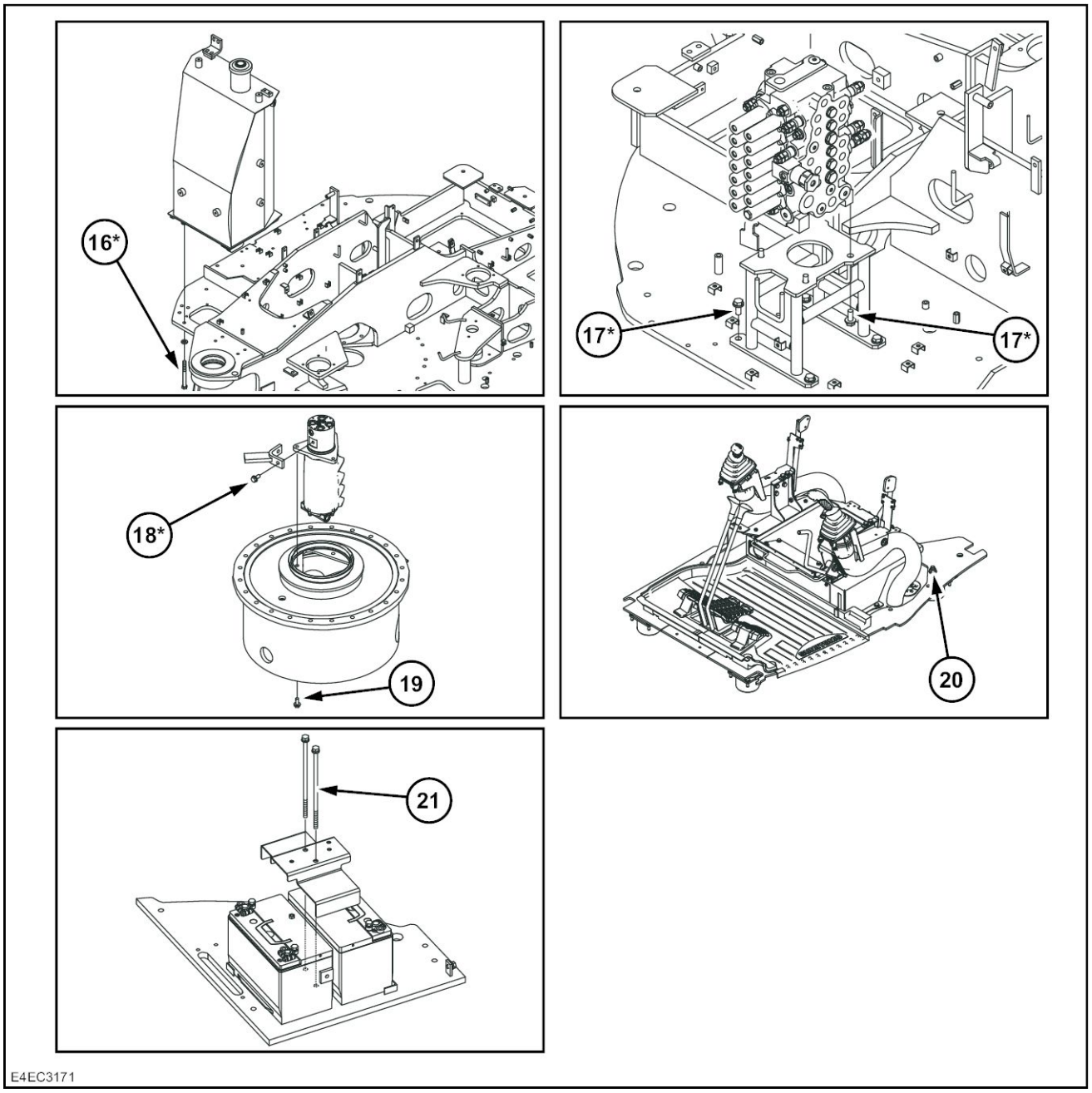

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Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

   NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*
4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or CASE CONSTRUCTION Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or CASE CONSTRUCTION Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
   - Position the welder ground clamp as close to the welding area as possible.
   - If you weld in close proximity to a computer module, then you should remove the module from the machine.
   - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

   NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*
5. Remove the battery ground cable. Reconnect the cable when you complete welding.

⚠ 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

Special tools

The special tools that CASE CONSTRUCTION suggests and illustrate in this manual have been specifically researched and designed for use with CASE CONSTRUCTION machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

Hydraulic contamination

Contamination in the hydraulic system is a major cause of the malfunction of hydraulic components. Contamination is any foreign material in the hydraulic oil.

Contamination can enter the hydraulic system in several ways:

- When you drain the oil or disconnect any line
- When you disassemble a component
- From normal wear of the hydraulic components
- From damaged seals or worn seals
- From a damaged component in the hydraulic system

All hydraulic systems operate with some contamination. The design of the components in this hydraulic system permits efficient operation with a small amount of contamination. An increase in this amount of contamination can cause problems in the hydraulic system.

The following list includes some of these problems:

- Cylinder rod seals that leak
- Control valve spools that do not return to neutral
- Movement of control valve spools is difficult
- Hydraulic oil that becomes too hot
- Pump gears, housing, and other parts that wear rapidly
- Relief valves or check valves held open by dirt
- Quick failure of components that have been repaired
- Slow cycle times are slow. The machine does not have enough power.

If your machine has any of these problems, check the hydraulic oil for contamination.

There are two types of contamination: microscopic and visible.

Microscopic contamination occurs when very fine particles of foreign material are suspended in the hydraulic oil. These particles are too small to see or feel. Microscopic contamination can be found by identification of the following problems or by testing in a laboratory.

Examples of problems caused by microscopic contamination:

- Cylinder rod seals that leak
- Control valve spools that do not return to neutral
- The hydraulic system has a high operating temperature

Visible contamination is foreign material that can be found by sight, touch, or odor. Visible contamination can cause a sudden failure of components.

Examples of problems caused by visible contamination:

- Particles of metal or dirt in the oil
- Air in the oil
- Dark or thick oil
- Oil with an odor of burned oil
- Water in the oil

If you find contamination, use a portable filter to clean the hydraulic system.

General specification

CX80C Crawler Excavators standard version (TIER 3)	APAC

Bucket capacity

Bucket capacity	**0.38 m³** / ISO heaped

Engine

Type		Water-cooled, 4-cycle diesel, overhead valve, 4-cylinder in line, direct injection (electric control)
Model		YANMAR 4TNV98-Z
Rated flywheel horse power	(SAE J1349 NET)	**41.1 kW** (**55.88 Hp**) (**2000 RPM**)
Piston displacement		**3318 L** (**876.52287 US gal**)
Maximum torque	(SAE J1349 NET)	**228 N·m** (**168.16 lb ft**) (**1500 RPM**)
Fuel consumption		Less than **244 g/kWh**
Bore and stroke		**98.0 mm** (**3.858 in**) x **110.0 mm** (**4.331 in**)
Voltage		**24 V**
Alternator		**60 A**
Starter		**24 V 3.5 kW**
Emergency stop		Electronic control system

Hydraulic system

Main pumps		2 variable displacement axial piston pumps	
	Max. oil flow		2 x **68.0 L/min** (**17.964 US gpm**) (**2000 RPM**)
	Working circuit pressure	Boom/Arm/Bucket	**29.4 MPa** (**4264.470 psi**)
		Swing circuit	**22.6 MPa** (**3278.130 psi**)
		Travel circuit	**29.4 MPa** (**4264.470 psi**)
Pilot pump		1 gear pump	
	Max. oil flow		**21.4 L/min** (**5.653 US gpm**)
	Working circuit pressure		**3.9 MPa** (**565.7 psi**)
Control valves			
		One 4-spool valve for Right track travel, Bucket, Boom and Arm acceleration	
		One 5-spool valve for Left track travel, Auxiliary, Swing, Boom acceleration and Arm	
Swing device			
	Motor	Fixed displacement axial piston motor	
	Brake	Mechanical disc brake	
	Final drive	Planetary gear reduction	
	Turn table bearing	Ball bearing type with internal gear	
	Maximum swing speed	**11.1 RPM**	
Cylinders		NO. of cylinders – bore X Rod diameter X Stroke	
	Boom	1 x Ø **115 mm** (**4.528 in**) - Ø **75 mm** (**2.953 in**) - **850 mm** (**33.465 in**)	
	Arm	1 x Ø **100 mm** (**3.937 in**) - Ø **65 mm** (**2.559 in**) - **755 mm** (**29.724 in**)	
	Bucket	1 x Ø **85 mm** (**3.346 in**) - Ø **55 mm** (**2.165 in**) - **665 mm** (**26.181 in**)	
Cooling system			
	Fan		Ø **460 mm** (**18.110 in**) with 8-blades
	Radiator capacity		**39.3 kW**
		Fin type	Corrugated fin (wavy type)
		Fin space	**1.75 mm** (**0.06890 in**)
	Long life coolant		Coolant **55%**, Water **45%**
	Oil cooler capacity		**17.9 kW**
		Fin type	Corrugated fin (wavy type)
		Fin space	**1.75 mm** (**0.06890 in**)
Filters			

	Suction filter		105 µm
	Return filter		6 µm
	Pilot line filter		8 µm

Hydraulic controls

Boom/Arm/Bucket/Swing	Pilot pressure control system (ISO control pattern)
Travel	Pilot pressure control system
Travel mode select	2 - speed travel
Hydraulic lock (gate lock)	

Electrical system

Engine control		
		Dial type throttle control
		One touch idle / Auto deceleration
		Emergency stop
Monitor system		
		Machine condition (Travel mode, etc…)
		Membrane switch (Wiper, light, etc…)
		Alarm display and buzzer
		Water temperature
		Fuel level
Wire harness		
		Waterproof type connector
Safety		
		Travel alarm
		Double horn
Battery		2 x **12 V 72 A·h** / **5 h**
Lights		
Working light	Boom	**24 V 70 W** x 1
	Cab	**24 V 70 W** x 1
Operator's cab room		**24 V 70 W** x 1

Operator environment

Operator's cab	
	Smooth and round shape design cab, fabricated by press work
	Safety glass for all windows
	Shock-less cab suspension by 4-point fluid mounting
	Sliding front window with auto lock
	Windshield wiper & washer
	AM/FM Radio with auto-tuner
	Floor matr
	Hinged skylight
	Auto air conditioner
	Top guard OPG level 1 (in CAB structure)
Operator's seat	
	Cloth upholstered type seat with suspension
	Reclining and sliding seat
Others	
	Rear view mirror (Cab side and Right side)

Undercarriage

Travel motor	Variable displacement axial piston motor
Brake	Mechanical disc brake

Hydraulic service brake		Brake valve
Final drive		Planetary gear reduction
Travel speeds	High	**5.0 km/h** (**3.107 mph**)
	Low	**3.1 km/h** (**1.926 mph**)
Drawbar pull		**59.8 kN** (**13443.575 lb**)
Number of carrier rollers (each side)		1
Number of track rollers (each side)		5
Number of shoes (each side)		39
Type of shoe		Triple grouser shoe
Link pitch		**154 mm** (**6.063 in**)
Width of shoe		**450 mm** (**17.717 in**) (S.T.D)
Grade-ability		**70%** (**35°**)

Mass

Operating mass	**7540 kg** (**16622.855 lb**)
with **1.69 m** (**5.5446 ft**) Arm, **0.38 m³** Bucket, **450 mm** (**17.717 in**) grouser shoe, operator, lubricant, coolant and full fuel tank	
Shipping mass	**7100 kg** (**15652.821 lb**)
Operating mass - (operator mass [**75 kg** (**165.35 lb**)]) + **90%** of fuel mass + bucket mass [**270 kg** (**595.248 lb**)])	
Ground pressure	**0.034 MPa** (**4.93170 psi**)
with **1.69 m** (**5.5446 ft**) Arm, **0.38 m³** Bucket, **450 mm** (**17.717 in**) grouser shoe	

Digging force (with 1.69 m (5.5446 ft) (with 0.38 m³ Bucket) (ISO 6015)

	[**1.69 m** (**5.5446 ft**)] Arm
Arm digging force	**39.3 kN** (**8834.991 lb**)
Bucket digging force	**56.4 kN** (**12679.224 lb**)

Dimensions

	[**1.69 m** (**5.5446 ft**)] Arm
Overall length (without attachment)	**3170 mm** (**124.803 in**)
Overall length (with attachment)	**6090 mm** (**239.764 in**)
Overall height (with attachment)	**2750 mm** (**108.268 in**)
Cab height	**2750 mm** (**108.268 in**)
Upper structure overall width	**2260 mm** (**88.976 in**)
Swing (rear end) radius	**1750 mm** (**68.898 in**)
Clearance height under upper structure	**750 mm** (**29.528 in**)
Minimum ground clearance	**360 mm** (**14.173 in**)
Wheel base (Center to center of wheels)	**2210 mm** (**87.008 in**)
Crawler overall length	**2845 mm** (**112.008 in**)
Track gauge	**1870 mm** (**73.622 in**)
Undercarriage overall width [with **450 mm** (**17.717 in**) shoes]	**2320 mm** (**91.339 in**)
Crawler tracks height	**675 mm** (**26.575 in**)

Working ranges

	[**1.69 m** (**5.545 ft**)] Arm
Boom length	**3500 mm** (**137.795 in**)
Bucket radius	**1050 mm** (**41.339 in**)
Bucket wrist action	**177°**
Maximum reach at GRP	**6290 mm** (**247.638 in**)
Maximum reach	**6460 mm** (**254.331 in**)
Max. digging depth	**4050 mm** (**159.449 in**)
Max. digging height	**6950 mm** (**273.622 in**)

Max. dumping height	**4890 mm** (**192.520 in**)

General specification

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

Bucket capacity

Type	**0.38 m³** / ISO heaped

Engine

Type		Water-cooled, 4-cycle diesel, overhead valve, 4-cylinder in line, direct injection (electric control)
Model		YANMAR 4TNV98-Z
Rated flywheel horse power	(SAE J1349 NET)	**41.1 kW** (**55.880 Hp**) (**2000 RPM**)
Piston displacement		**3318 L** (**876.52287 US gal**)
Maximum torque	(SAE J1349 NET)	**228 N·m** (**168.164 lb ft**) (**1500 RPM**)
Fuel consumption		Less than **244 g/kWh**
Bore and stroke		**98.0 mm** (**3.8583 in**) x **110.0 mm** (**4.3307 in**)
Voltage		**24 V**
Alternator		**60 A**
Starter		**24 V 3.5 kW**
Emergency stop		Electronic control system

Hydraulic system

Main pumps		2 variable displacement axial piston pumps	
	Max. oil flow		2 x **68.0 L/min** (**17.964 US gpm**) (**2000 RPM**)
	Working circuit pressure	Boom/Arm/Bucket	**29.4 MPa** (**4264.470 psi**)
		Swing circuit	**22.6 MPa** (**3278.130 psi**)
		Travel circuit	**29.4 MPa** (**4264.470 psi**)
Pilot pump		1 gear pump	
	Max. oil flow		**21.4 L/min** (**5.653 US gpm**)
	Working circuit pressure		**3.9 MPa** (**565.7 psi**)
Blade pump		1 gear pump	
	Max. oil flow		**36.6 L/min** (**9.669 US gpm**)
	Working circuit pressure		**23.5 MPa** (**3408.675 psi**)
Control valves			
		One 4-spool valve for Right track travel, Bucket, Boom and Arm acceleration	
		One 5-spool valve for Left track travel, Auxiliary, Swing, Boom acceleration and Arm	
		One 1-spool valve for Blade	
Swing device			
	Motor	Fixed displacement axial piston motor	
	Brake	Mechanical disc brake	
	Final drive	Planetary gear reduction	
	Turn table bearing	Ball bearing type with internal gear	
	Maximum swing speed	**11.1 RPM**	
Cylinders		NO. of cylinders – bore X Rod diameter X Stroke	
	Boom	1 x Ø **115 mm** (**4.528 in**) - Ø **75 mm** (**2.953 in**) - **850 mm** (**33.465 in**)	
	Arm	1 x Ø **100 mm** (**3.937 in**) - Ø **65 mm** (**2.559 in**) - **755 mm** (**29.724 in**)	
	Bucket	1 x Ø **85 mm** (**3.346 in**) - Ø **55 mm** (**2.165 in**) - **665 mm** (**26.181 in**)	
	Blade	1 x Ø **110 mm** (**4.331 in**) - Ø **70 mm** (**2.756 in**) - **180 mm** (**7.087 in**)	
Cooling system			
	Fan		Ø **460 mm** (**18.110 in**) with 8-blades
	Radiator capacity		**39.3 kW**
		Fin type	Corrugated fin (wavy type)
		Fin space	**1.75 mm** (**0.06890 in**)