CEBM013003

Shop Manual

GALEO

WA200-5L
WA200PT-5L

WHEEL LOADER

SERIAL NUMBERS

WA200-5L	A82001	and UP
WA200PT-5L	A89001	

CONTENTS

SAFETY

SAFETY NOTICE

IMPORTANT SAFETY NOTICE

Proper service and repair is extremely important for the safe operation of your machine. The service and repair techniques recommended and described in this manual are both effective and safe methods of operation. Some of these operations require the use of tools specially designed for the purpose.

To prevent injury to workers, the symbol ⚠ is used to mark safety precautions in this manual. The cautions accompanying the symbols should always be followed carefully. If any dangerous situation arises or may possibly arise, first consider safety, and take the necessary actions to deal with the situation.

GENERAL PRECAUTIONS

Mistakes in operation are extremely dangerous. Read the OPERATION & MAINTENANCE MANUAL carefully BEFORE operating the machine.

1. Before carrying out any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.

2. When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
   - Always wear safety glasses when hitting parts with a hammer.
   - Always wear safety glasses when grinding parts with a grinder, etc.

3. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.

4. When carrying out any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.

5. Keep all tools in good condition and learn the correct way to use them.

6. Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor. Smoke only in the areas provided for smoking. Never smoke while working.

PREPARATIONS FOR WORK

1. Before adding oil or making repairs, park the machine on hard, level ground, and block the wheels or tracks to prevent the machine from moving.

2. Before starting work, lower blade, ripper, bucket or any other work equipment to the ground. If this is not possible, insert the safety pin or use blocks to prevent the work equipment from falling. In addition, be sure to lock all the control levers and hang warning signs on them.

3. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.

4. Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine. Never jump on or off the machine. If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

PRECAUTIONS DURING WORK

1. When removing the oil filler cap, drain plug or hydraulic pressure measuring plugs, loosen them slowly to prevent the oil from spurting out. Before disconnecting or removing components of the oil, water or air circuits, first remove the pressure completely from the circuit.

2. The water and oil in the circuits are hot when the engine is stopped, so be careful not to get burned. Wait for the oil and water to cool before carrying out any work on the oil or water circuits.

3. Before starting work, remove the leads from the battery. ALWAYS remove the lead from the negative (-) terminal first.

4. When raising heavy components, use a hoist or crane. Check that the wire rope, chains and hooks are free from damage. Always use lifting equipment which has ample capacity. Install the lifting equipment at the correct places. Use a hoist or crane and operate slowly to prevent the component from hitting any other part. Do not work with any part still raised by the hoist or crane.

5. When removing covers which are under internal pressure or under pressure from a spring, always leave two bolts in position on opposite sides. Slowly release the pressure, then slowly loosen the bolts to remove.

6. When removing components, be careful not to break or damage the wiring, Damaged wiring may cause electrical fires.

7. When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips on to the floor, wipe it up immediately. Fuel or oil on the floor can cause you to slip, or can even start fires.

8. Never use flammable liquids to clean parts, always use approved non-flammable solvents to clean parts.

9. Be sure to assemble all parts in their original locations. Replace any damaged part with new parts.
   - When installing hoses and wires, be sure that they will not be damaged by contact with other parts when the machine is being operated.

10. When installing high pressure hoses, be sure that they are not twisted. Damaged tubbing dangerous, be extremely careful when installing tubes for high pressure circuits. Also make sure parts are correctly installed.

11. When assembling or installing parts, always use the specified tightening torques and sequences. When installing protective parts such as guards, or parts that may vibrate or rotate at high speeds, be particularly careful to check their installation carefully.

12. When aligning two holes, never insert your fingers or hand. Use appropriate tools to align parts.

13. When measuring hydraulic pressure, be sure the measuring tool is correctly assembled before taking any measurements.

14. Take care when removing or installing the tracks on track-type machines. When removing the track, the track separates suddenly, never let anyone stand at either end of the track.

15. When making repairs or adjustments on electronically controlled engines, avoid any physical contact with the injection systems wiring harness while the engine is running. Due to the high voltage and amperage in this system, serious injury may occur.

16. When removing the track, the track separates suddenly, so never let anyone stand at either end of the track.

GENERAL

This shop manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This shop manual mainly contains the necessary technical information for operations performed in a service workshop. For ease of understanding, the manual is divided into the following sections. These sections are further divided into each main group of components.

GENERAL

This section lists the general machine dimensions, performance specifications, component weights, and fuel, coolant and lubricant specification charts.

STRUCTURE AND FUNCTION

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

TESTING, ADJUSTING AND TROUBLESHOOTING

This section explains checks to be made before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs. Troubleshooting charts correlating “Problems” to “Causes” are also included in this section.

DISASSEMBLY AND ASSEMBLY

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

MAINTENANCE STANDARD

This section gives the judgement standards when inspecting disassembled parts.

NOTICE

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your distributor for the latest information.

HOW TO READ THE SHOP MANUAL

VOLUMES

Shop manuals are issued as a guide to carrying out repairs. They are divided as follows:

Chassis volume: Issued for every machine model
Engine volume: Issued for each engine series

Electrical volume: Each issued as one to cover all models
Attachment volume: Each issued as one to cover all models

These various volumes are designed to avoid duplication of information. Therefore to deal with all repairs for any model, it is necessary that chassis, engine, electrical and attachment be available.

DISTRIBUTION AND UPDATING

Any additions, amendments or other changes will be sent to your distributors. Get the most up-to-date information before you start any work.

FILING METHOD

1. See the page number on the bottom of the page. File the pages in correct order.
2. Following examples show how to read the page number:
   Example:
   10 - 3
   - Item number (10. Structure and Function)
   - Consecutive page number for each item
3. Additional pages: Additional pages are indicated by a hyphen (-) and numbered after the page number. File as in the example.
   Example:

10-4
10-4-1
10-4-2 — Added pages
10-5

REVISED EDITION MARK

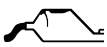
When a manual is revised, an edition mark (①②③…) is recorded on the bottom outside corner of the pages.

REVISIONS

Revised pages are shown at the LIST OF REVISED PAGES between the title page and SAFETY page.

SYMBOLS

So that the shop manual can be of ample practical use, important places for safety and quality are marked with the following symbols.

Symbol	Item	Remarks
	Safety	Special safety precautions are necessary when performing the work.
★	Caution	Special technical precautions or other precautions for preserving standards are necessary when performing the work.
	Weight	Weight of parts or systems. Caution necessary when selecting hoisting wire or when working posture is important, etc.
	Tightening torque	Places that require special attention for tightening torque during assembly.
	Coat	Places to be coated with adhesives and lubricants etc.
	Oil, water	Places where oil, water or fuel must be added, and the capacity.
	Drain	Places where oil or water must be drained, and quantity to be drained.

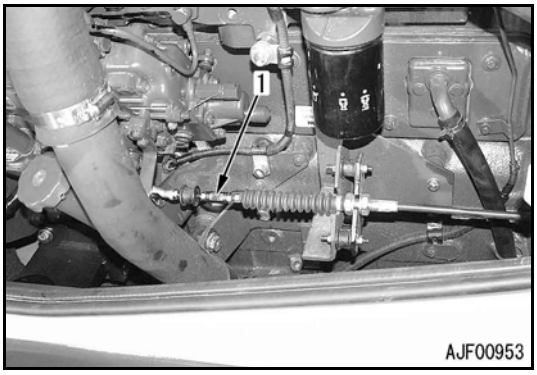
FUEL INJECTION PUMP ASSEMBLY

REMOVAL

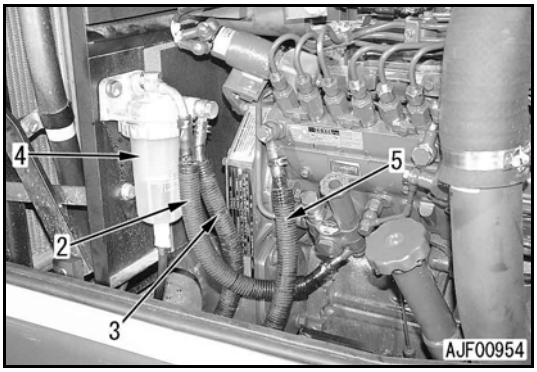
WARNING! Disconnect the cable from the negative (-) battery terminal.

WARNING! Lower the work equipment to the ground and stop the engine.

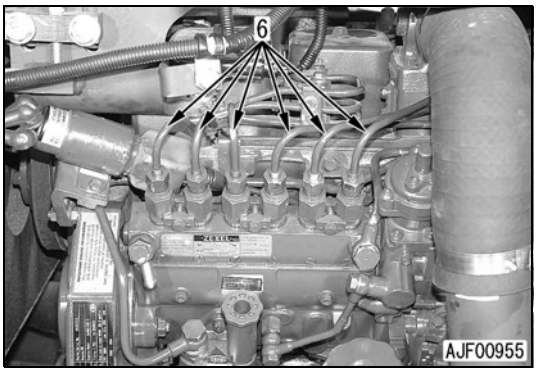
1. Open the engine right side cover.
2. Disconnect fuel control cable (1) from the fuel injection pump. ※1



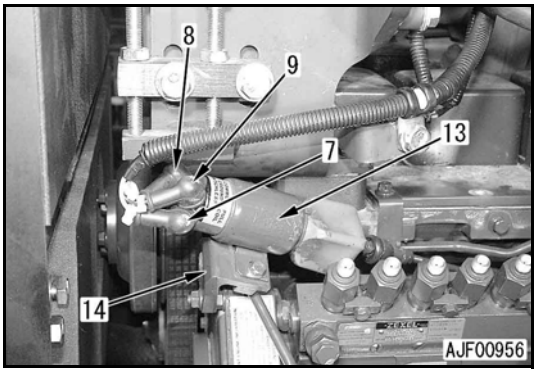
3. Disconnect fuel supply hoses (2) and (3).
4. Disconnect fuel filter (4).
5. Disconnect fuel return hose (5).



6. Remove six fuel injection tubes (6). ※2

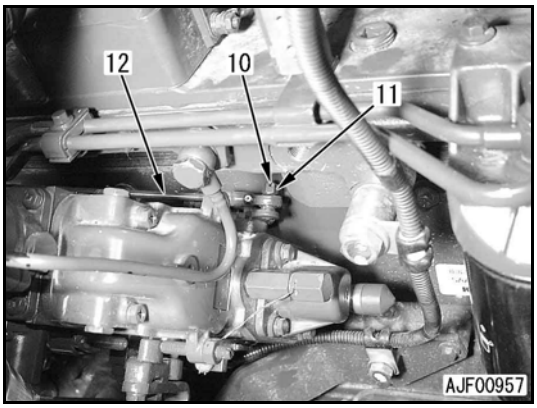


7. Disconnect engine stop solenoid terminals PULL (7), HOLD (8), and GND (9).



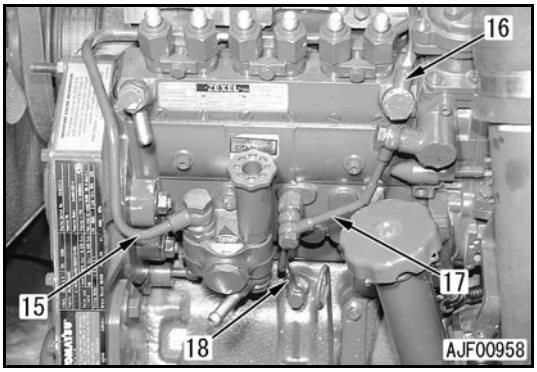
8. Remove cotter pin (10) and nut (11), and then remove engine stop solenoid rod (12) from the fuel injection pump.

9. Remove engine stop solenoid (13) and bracket (14) together. ※3

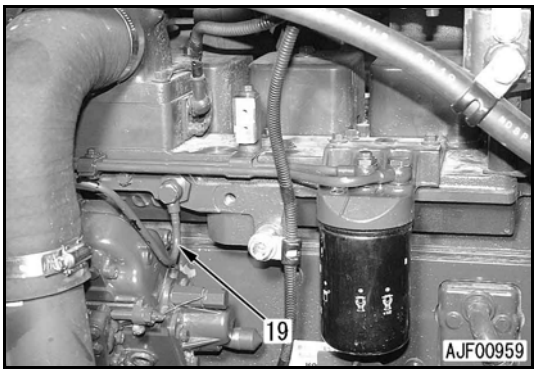


10. Remove fuel tubes (15) and (16). ※4

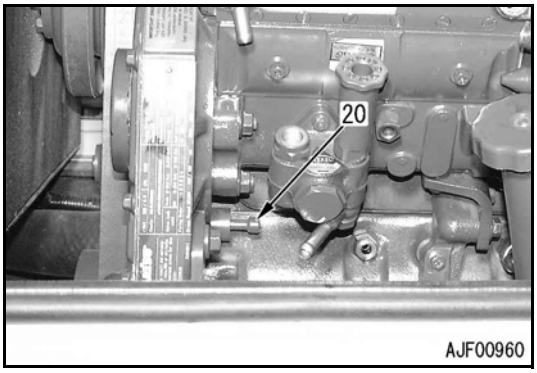
11. Remove lubrication tubes (17) and (18).



12. Remove boost compensator tube (19).

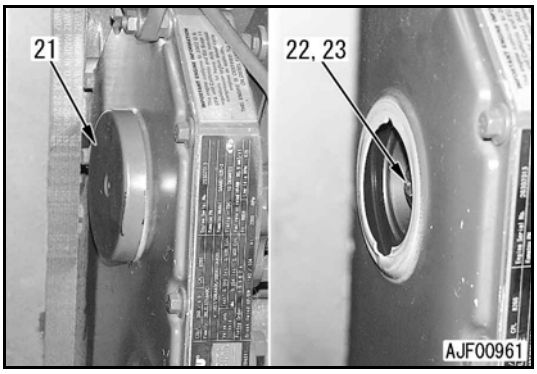


13. Using timing pin (20), match the timing gear to the fuel injection timing.For details, see TESTING AND ADJUSTING, Fuel injection timing.

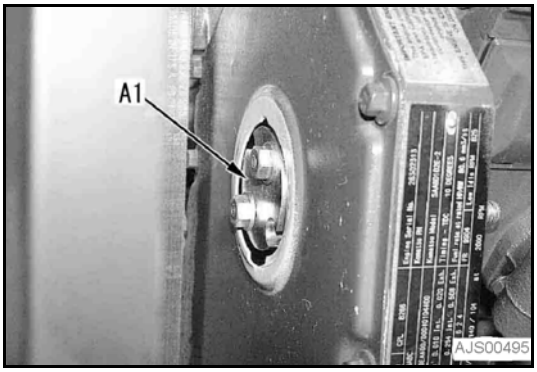


14. Remove cap (21).
    ★ Use a filter wrench, etc. to remove the cap.

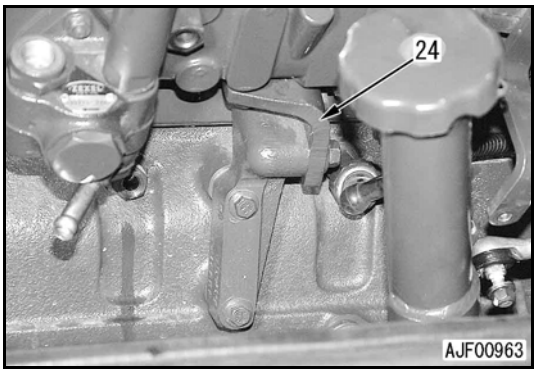
15. Remove fuel injection pump nut (22) and washer (23).
    ★ Take care not to drop the nut and washer into the case.



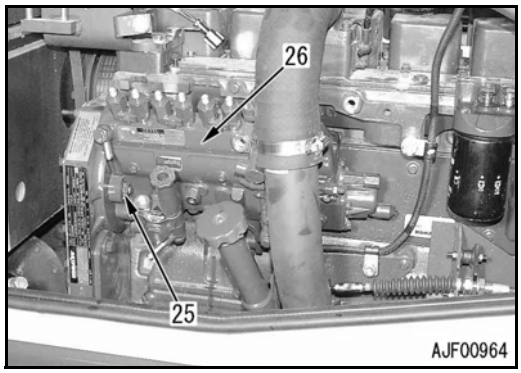
16. Using tool **A1**, disconnect the fuel injection pump shaft and pump drive gear.



17. Remove fuel injection pump bracket (24).



18. Remove four fuel injection pump mounting nuts (25) and fuel injection pump assembly (26). ※5



INSTALLATION

- Install in the reverse order of removal.

※1

★ Adjust the fuel control cable. For details, see TESTING AND ADJUSTING, Measuring, testing operating force of accelerator pedal.

※2

Fuel injection tube nut (on injection pump side):
24 ± 4 N·m (17.7 ± 3 lbf-ft)
Fuel injection tube nut (on nozzle holder side):
30 ± 5 N·m (22.1 ± 3.7 lbf-ft)

※3

Engine stop solenoid bracket mounting nut:
14 - 21 N·m (10.3 - 15.5 lbf-ft)

★ Adjust the engine stop solenoid. For details, see TESTING AND ADJUSTING, Adjusting engine stop solenoid.

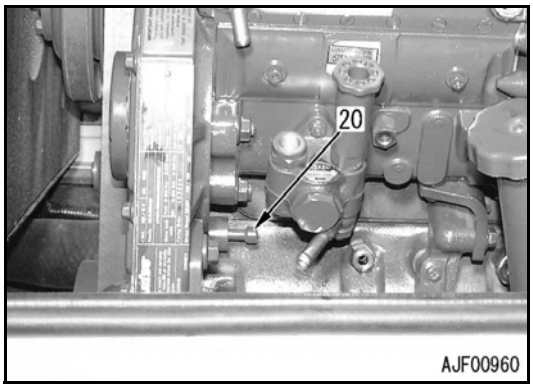
※4

Fuel tube joint bolt (on fuel filter side):
19.6 - 29.4 N·m (14.5 - 21.7 lbf-ft)

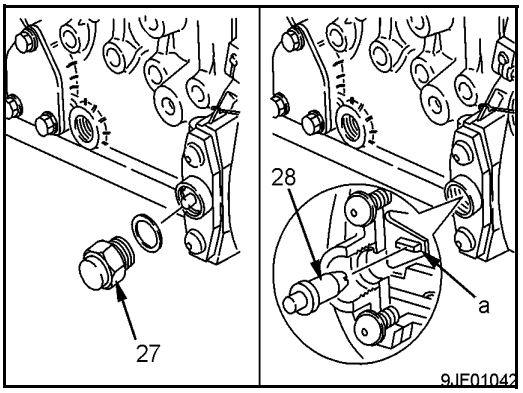
※5

★ Install the fuel injection pump assembly according to the following procedure..

1. Ensure that the drive gear is secure to the fuel injection timing using timing pin (20).

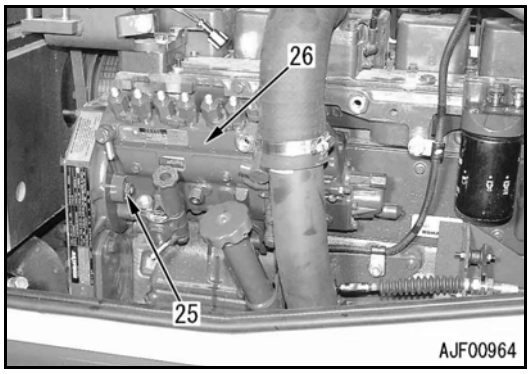


2. Remove plug (27) from the fuel injection pump, turn over timing pin (28), and reinstall the plug into the fuel injection pump.
   - ★ Check that the cut of the pin is meshed with projection (a) in the pump.
   - ★ If you cannot insert the timing pin, the injection timing is incorrect. Make an adjustment. See TESTING AND ADJUSTING, Fuel injection timing.



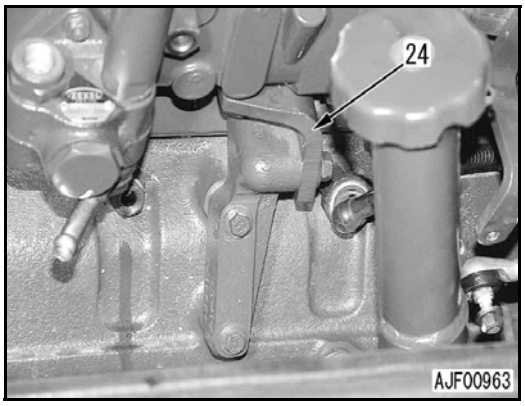
3. Install fuel injection pump assembly (26) and tighten four nuts (25).

Fuel injection pump mounting nut:
9.8 ± 2 N·m (7.2 ± 1.5 lbf-ft)



4. Install fuel injection pump bracket (24).

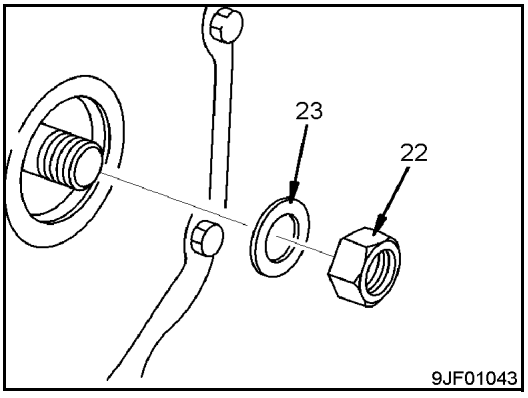
Fuel injection pump bracket mounting bolt (on injection pump side): **22 ± 2 N·m (16.2 ± 1.5 lbf-ft)**



5. Install washer (23) and tighten fuel injection pump nut (22) temporarily.
   - ★ Take care not to drop the nut and washer into the case.

WARNING! Tighten the nut to the following torque temporarily so that it will not damage the timing pin.

Temporary tightening torque of fuel injection pump nut:
12.5 ± 2.5 N·m (9.2 ± 1.8 lbf-ft)



6. Pull timing pin (20) on the timing gear side and return it to its original position.