

Shop Manual

PC490LC-10

HYDRAULIC EXCAVATOR

SERIAL NUMBERS PC490LC-10 A40001 and up

ENGINE 6D125E-6

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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 this symbol 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 performing any greasing or repairs, read all the precautions given on the decals which are fixed to the machine.
2. When performing 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 perform the work. When performing welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.



WARNING! Never modify, weld, cut, or drill on any part of a ROPS structure. Doing so may weaken the structure which could lead to possible failure in a rollover situation.

4. When performing 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. Only qualified workers must perform the work and operation which require license or qualification.
6. Keep all tools in good condition and learn the correct way to use them. Before starting work, thoroughly check the tools, machine, forklift truck, service car, etc.
7. 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.
8. Before starting work, warm up your body thoroughly to start work under good conditions. Avoid continuous work for long hours and take rests at proper intervals to keep your body in good condition. Take rests in specified safe places.

Safety Points

| | |
|----|--|
| 1 | Good arrangement |
| 2 | Correct work clothes |
| 3 | Following work standard |
| 4 | Making and checking signs |
| 5 | Prohibition of operation and handling by unlicensed workers |
| 6 | Safety check before starting work |
| 7 | Wearing protective goggles (for cleaning or grinding work) |
| 8 | Wearing shielding goggles and protectors (for welding work) |
| 9 | Good physical condition and preparation |
| 10 | Precautions against work which you are not used to or work with which you are too familiar |

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 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, coolant or air circuits, first remove the pressure completely from the circuit.
2. The coolant and oil in the circuits are hot when the engine is stopped, so be careful not to get burned. Wait for the oil and coolant to cool before performing any work on the oil or coolant circuits.
3. Before starting work, shut down the engine. When working on or around a rotating part, in particular, shut down the engine. When checking the machine without stopping the engine (measuring oil pressure, revolving speed, temperature, etc.) take extreme care not to get rolled or caught in rotating or moving parts.
4. For the machine equipped with a battery disconnect switch, before starting the work, check that the system operating lamp is turned OFF, and then turn the battery disconnect switch to the OFF (o) position and pull the switch key out. For machines with a battery disconnect switch, before starting the work, remove the leads from the battery. ALWAYS remove the lead from the negative (-) terminal first.
5. 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.
6. 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.
7. When removing components, be careful not to break or damage the wiring. Damaged wiring may cause electrical fires.
8. 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.
9. Never use flammable liquids to clean parts, use only non-flammable approved cleaning solutions to clean parts.
10. Be sure to assemble all parts again in their original places. 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.
11. When installing high pressure hoses, make sure that they are not twisted. Damaged tubes are dangerous, so be extremely careful when installing tubes for high pressure circuits. Also check that connecting parts are correctly installed.
12. When assembling or installing parts, always use the specified tightening torques. When installing protective parts such as guards, or parts which vibrate violently or rotate at high speed, be particularly careful to check that they are installed correctly.

13. When aligning two holes, never insert your fingers or hand. Be careful not to get your fingers caught in a hole.
14. When measuring hydraulic pressure, check that the measuring tool is correctly assembled before taking any measurements.
15. Take care when removing or installing the tracks of track-type machines. When removing the track, the track separates suddenly, so never let anyone stand at either end of the track.
16. If the engine is operated for a long time in a place which is not ventilated well, you may suffer from gas poisoning. Accordingly, open the windows and doors to ventilate well.
17. Precautions for disconnecting and connecting hoses and tubes in air conditioner circuit.
 - A. Disconnection
 - i. Ask a qualified person for collection, and charge of the refrigerant
 - ii. Never release the refrigerant (R134a) to the atmosphere.
 - iii. When loosening the nuts fixing air conductance hoses and tubes, be sure to use two wrenches; one to fix and the other to loosen the nut.



WARNING! Collect the air conditioner refrigerant gas (R134a).
 If the refrigerant gas (R134a) gets in your eyes, you may lose your sight, and if it touches your skin, you may suffer from frostbite. Accordingly, when collecting or adding it, you must be qualified for handling the refrigerant and wear protective goggles, gloves and clothing with long sleeves.

- B. Connection
 - i. When installing the air conditioner circuit hoses and tubes, take care that dirt, dust, water, etc. will not enter them.
 - ii. When connecting the air conditioner hoses and tubes, check that O-rings (1) are fitted to their joints.
 - iii. Once an O-ring is used, it is deformed and deteriorated. Accordingly, do not reuse it.
 - iv. When removing O-rings, use a soft tool so that the piping will not be damaged.
 - v. Check that each O-ring is not damaged or deteriorated.
 - vi. Apply compressor oil for refrigerant (R134a)

★ However, do not apply oil to the threads portion of a bolt, nut or union.

| Manufacturer | Part Name |
|-----------------------|--------------------------------|
| DENSO | ND-OIL8 |
| VALEO THERMAL SYSTEMS | ZXL100PG (equivalent to PAG46) |
| SANDEN | SP-10 |

- vii. When tightening nuts of the air conditioner hoses and tubes, be sure to use two wrenches; one to fix the nut and the other to tighten the nut to the specified torque (Use a torque wrench for tightening).