CEBM000102

Shop Manual

KOMATSU®

PC200,200LC-6
PC210LC-6
PC220LC-6
PC250LC-6
HYDRAULIC EXCAVATOR

SERIAL NUMBERS

PC200-6 - A82001
PC200LC-6 - A82001
PC210LC-6 - A82001
PC220LC-6 - A82001
PC250LC-6 - A82001

and up

This material is proprietary to Komatsu America International Company and is not to be reproduced, used, or disclosed except in accordance with written authorization from Komatsu America International Company.

It is our policy to improve our products whenever it is possible and practical to do so. We reserve the right to make changes or add improvements at any time without incurring any obligation to install such changes on products sold previously.

Due to this continuous program of research and development, periodic revisions may be made to this publication. It is recommended that customers contact their distributor for information on the latest revision.

October 1996

Copyright 1996 Komatsu America International Company

MidWestTech | Komatsu PC200-6, 200LC-6, 210LC-6, PC220LC-6, PC250LC-6 Hydraulic Excavator Service Manual | Publication CEBM000102

Order the manual at mid-west-tech.com >

CONTENTS

01 GENERAL 01-1

10 STRUCTURE AND FUNCTION 10-1

20 TESTING AND ADJUSTMENT 20-1

30 DISASSEMBLY AND ASSEMBLY 30-1

40 MAINTENANCE STANDARD 40-1

MidWestTech | Komatsu PC200-6, 200LC-6, 210LC-6, PC220LC-6, PC250LC-6 Hydraulic E... Order the manual at mid-west-tech.com >

POINTS TO REMEMBER WHEN TROUBLESHOOTING

⚠ Stop the machine in a level place, and check that the safety pin, blocks, and parking brake are securly fitted.

⚠ When carrying out the operation with two or more workers, keep strictly to the agreed signals, and do not allow any unauthorized person to come near.

⚠ If the radiator cap is removed when the engine is hot, hot water may spurt out and cause burns, so wait for the engine to cool down before starting any troubleshooting.

⚠ Be extremely careful not to touch any hot parts or to get caught in any rotating parts.

⚠ When disconnecting wiring, always disconnect the negative (-) terminal of the battery first.

⚠ When removing the plug or cap from a location which is under pressure from oil, water, or air, always release the internal pressure first. When installing measuring equipment, be sure to connect it properly.

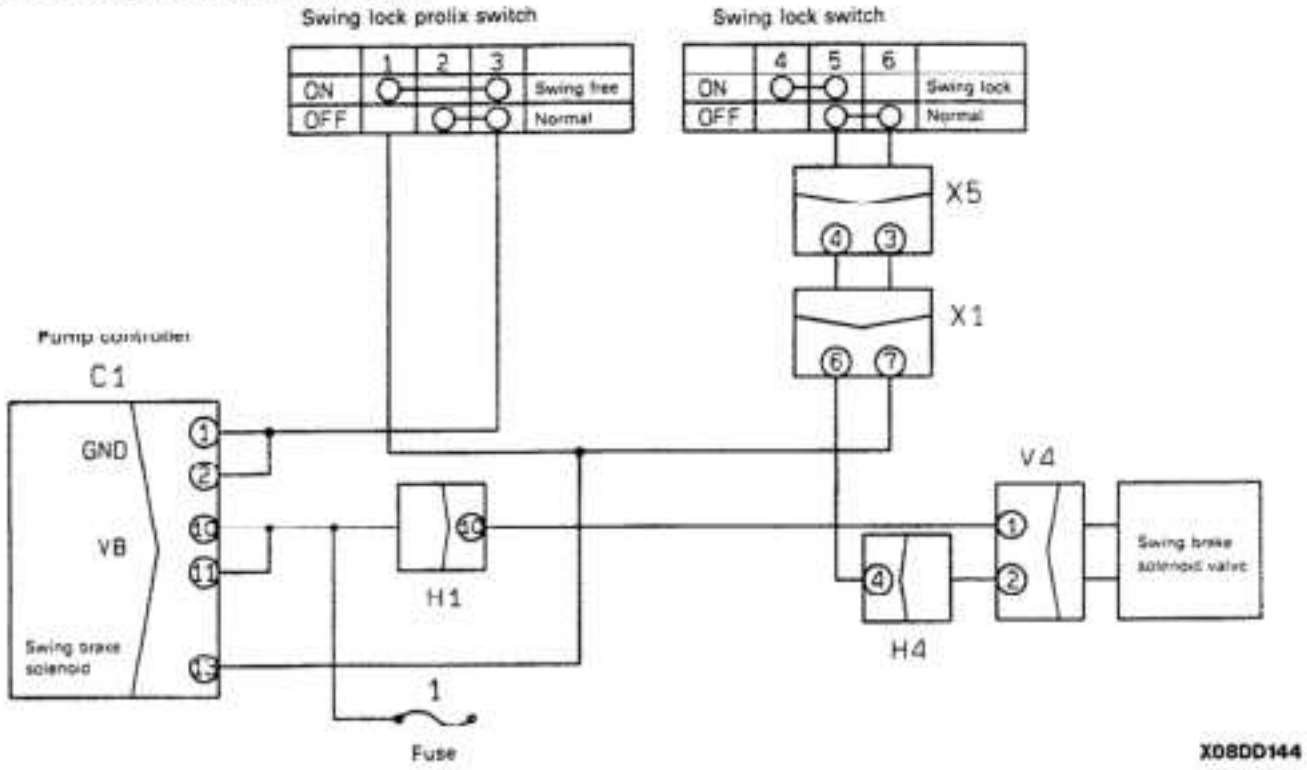
The aim of troubleshooting is to pinpoint the basic cause of the failure, to carry out repairs swiftly, and to prevent reoccurrance of the failure.
When carrying out troubleshooting, an inportant point is of course to understand the structure and function. However, a short cut to effective troubleshooting is to ask the operator various questions to form some idea of possiable causes of the failure that would produce the reported symptoms.

1. When carrying out troubleshooting, do not hurry to disassemble the components.
   If components are diassembled immediately any failure occure:
   - Parts that have no connection with the failure or other unnecessary parts will be diassembled.
   - It will become impossible to find the cause of the failure.

   It will also cause a waste of manhours, parts, or oil or grease, and at the same time, will also lose the confidence the user or operator.
   For this reason, when carrying out troubleshooting, it is necessary to carry out thorough prior investigation and to carry out troubleshooting in accordance with the fixed procedure.
2. Points to ask user or operator
   1) Have any other problems occured apart from the problem that has been reported?
   2) Was there anything strange about the machine before the failure occured?
   3) Did the failure occure suddenly, or were there problems with the machine condition before this?
   4) Under what conditions did the failure occur?
   5) Had any repairs been carried out before the failure?
      When were these repairs carried out?
   6) Has the same kind of failure occurred before?
3. Check before troubleshooting
   1) Check the oil level.
   2) Check for any external leakage of oil from the piping or hydraulic equipment.
   3) Check the travel of the control levers.
   4) Check the stroke of the control valve spool.
   5) Other maintenance items can be checked externally, so check any item that is considered to be necessary.
4. Confirming failure
   - Confirm the extent of the failure yourself, and judge whether to handle it as a real failure or as a problem with the method of operation, etc.
     - ★ When operating the machine to reenact the troubleshooting symptoms, do not carry out any investigation or measurment that may make the problem worse.
5. Troubleshooting
   - Use the results of the investigation and inspection in items 2 - 4 to narrow down the causes of failure, then use the troubleshooting flowcharts to locate the postion of the failure exactly.
     - ★ The basic procedure for troubleshooting is as follows
       1) Start from the simple points.
       2) Start from the most likely points.
       3) Investigate other related parts or information.
6. Measures to remove the root cause of failure
   - Even if the failure is repaired, if the root cause of the failure is not repaired, the same failure will occure again.
     To prevent this, always investigate why the problem occured. Then, remove the root cause.

MidWestTech | Komatsu PC200-6, 200LC-6, 210LC-6, PC220LC-6, PC250LC-6 Hydraulic Ex... Order the manual at mid-west-tech.com >

C-4 Related electric circuit diagram



MidWestTech | Komatsu PC200-6, 200LC-6, 210LC-6, PC220LC-6, PC250LC-6 Hydraulic Ex... Order the manual at mid-west-tech.com >

ASSEMBLY OF CONTROL VALVE ASSEMBLY

- **Before assembling, coat the sliding surface with engine oil.**

1. R.H. travel control valve, L.H. travel control valve

1) Assemble spool assembly (53) to valve body.
2) Assemble retainer (56) and spring (55) to spool, then fit O-ring to case (54) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)
3) Assemble retainer (52) and spring (51) to spool, then fit O-ring to case (50) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)

2. Swing control valve

1) Assemble spool assembly (49) to valve body.
2) Assemble retainer (44) and spring (42) to spool, then fit O-ring to case (41) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)
3) Assemble retainer (48), shim (47) and spring (46) to spool, then fit O-ring to case (45) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)

3. Arm control valve, boom control valve, bucket control valve

1) Assemble spool assembly (40) to valve body.
2) Assemble retainer (44), shim (43), and spring (42) to spool, then fit O-ring to case (41) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)
   ★ Shim (43) is only for the boom control valve.
3) Assemble retainer (39) and spring (38) to spool, then fit O-ring to case (37) and install.
   Case mounting bolt: 30.9 ± 3.4 Nm (2.9 ± 0.5 kgm)

4. Covers

1) Fit O-ring to cover (36) and install.
2) Fit O-ring to cover (35) and install.
   Mounting bolt: 166.7 ± 9.8 Nm (17 ± 1 kgm)
   ★ Tighten the mounting bolts in the order shown in the diagram.

5. LS shuttle valve, pump merge-divider valve, arm counterbalance valve

1) Assemble valve (60) and spring (59) to valve body, and install arm counterbalance valve (34).
   Mounting bolt: 66.2 ± 7.4 Nm (6.8 ± 0.8 kgm)
   ★ Tighten the mounting bolts in the order shown in the diagram.
2) Assemble valve (58) and spring (57) to valve body, and install pump merge-divider valve (33).
   Mounting bolts: 166.3 ± 9.4 Nm (17 ± 1 kgm)
   ★ Tighten the mounting bolts in the order shown in the diagram.
3) Install LS shuttle valves (32) and (31).
   Mounting bolt: 66.2 ± 7.4 Nm (6.8 ± 0.8 kgm)

6. LS select valve

Install LS select valve (30).
LS select valve: 127.5 ± 19.6 Nm (13 ± 2 kgm)

7. Pressure compensation valves

- Check marks made on each pressure compensation valve when disassembling and install in correct position.

1) Before installing pressure compensation valves below, install check valves (29) and (22).
2) Fit O-rings, then install arm IN pressure compensation valve (28), L.H. travel FORWARD pressure compensation valve (27), left swing pressure compensation valve (26), boom LOWER pressure compensation valve (25), R.H. travel FORWARD pressure compensation valve (24), and bucket CURL pressure compensation valve (23).
3) Fit O-rings, then install arm OUT pressure compensation valve (21), L.H. travel REVERSE pressure compensation valve (20), right swing pressure compensation valve (19), boom RAISE pressure compensation valve (18), R.H. travel REVERSE pressure compensation valve (17), and bucket DUMP pressure compensation valve (16).
   Pressure compensation valve: 225.5 ± 19.6 Nm (23 ± 2 kgm)

8. Unload valves, safety-suction valves, suction valves

1) Fit O-rings and install suction valves (15), (14), (13) and (12).
   Suction valve: 147.1 ± 9.8 Nm (15 ± 1 kgm)
2) Fit O-ring and install safety-suction valves (11), (10), (9), (8), (7) and (6).
   Safety-suction valve: 147.1 ± 9.8 Nm (15 ± 1 kgm)
3) Fit O-ring and install unload valves (5) and (4).
   Unload valve: 98.1 ± 9.8 Nm (10 ± 1 kgm)

9. Main relief valve, main unload • LS relief valve

1) Fit O-ring and install main unload • LS relief valve (3).
   Main unload • LS relief valve: 85.9 ± 7.4 Nm (8.8 ± 0.8 kgm)
2) Fit O-ring and install main relief valve (1).
   Main relief valve: 53.9 ± 4.9 Nm (5.5 ± 0.5 kgm)

MidWestTech | Komatsu PC200-6, 200LC-6, 210LC-6, PC220LC-6, PC250LC-6 Hydraulic Ex... Order the manual at mid-west-tech.com >

JUDGEMENT TABLE FOR PUMP CONTROLLER AND HYDRAULIC RELATED PARTS

Figure n ○ shows position of bit pattern

FOLDOUT 19

| Failure mode | | User code | Pump controller (E2: ○○ system) Self-diagnostic display | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Checking monitoring, check items | | | | | | | | | | | | | | | | | | |