Komatsu wa200-5 service manual free online full text

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Jul 05, 2022 by Hamzeh A. (Amman, Jordan) Perfect! Got what I needed for my LT80! 1. October 2007 Copyright 2007 Komatsu Printed in USA DataKom Publishing Corporation 00-1 D CEBM013003 Shop Manual WA200-5L WA200PT-5L WHEEL LOADER This material is proprietary to Komatsu America Corp. and is not to be reproduced, used, or disclosed except in accordance with written authorization from Komatsu America Corp. 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. SERIAL NUMBERS WA200-5L A82001 and UP WA200PT-5L A89001 2. FOREWORD CONTENTS 00-2 3 WA200-5L 12 00CONTENTS 01 GENERAL . . . . . 01-1 10 STRUCTURE AND FUNCTION . . . . . 10-1 20 TESTING, ADJUSTING AND TROUBLESHOOTING . . . . . 20-1 30 DISASSEMBLY AND ASSEMBLY. . . . . 30-1 90 OTHER . . . . . 90-1 3. FOREWORD SAFETY WA200-5L, WA200PT-5L 00-3 3 12 SAFETY 00 SAFETY NOTICE 00 GENERAL PRECAUTIONS 00 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 00 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 00 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. IMPORTANT SAFETY NOTICE 00 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. WA200-5L, WA200PT-5L 4. FOREWORD SAFETY 00-4 3 WA200-5L, WA200PT-5L 12 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. 5. FOREWORD GENERAL 00-53 WA200-5L, WA200PT-5L 12 GENERAL 00 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 follow- ing sections. These sections are further divided into each main group of components. GENERAL This section lists the general machine dimensions, per- formance 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 trou- bleshooting. TESTING, ADJUSTING AND TROUBLESHOOT- ING 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. 6. FOREWORD HOW TO READ THE SHOP MANUAL 00-63 WA200-5L, WA200PT-5L 12 HOW TO READ THE SHOP MANUAL 00 VOLUMES 00 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 00 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 00 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: REVISED EDITION MARK 00 When a manual is revised, an edition mark (123...) is recorded on the bottom outside corner of the pages. REVISIONS 00 Revised pages are shown at the LIST OF REVISED PAGES between the title page and SAFETY page. SYMBOLS 00 So that the shop manual can be of ample practical use, important places for safety and quality are marked with the following symbols. 10-4 10-4-1 Added pages 10-4-2 10-5 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 select- ing hoisting wire or when work- ing 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. 7. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY WA200-5L, WA200PT-5L 30-19 3 12 FUEL INJECTION PUMP ASSEMBLY REMOVAL 1. Open the engine right side cover. 2. Disconnect fuel control cable (1) from the fuel injection pump. 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). WARNING! Disconnect the cable from the negative (-) battery terminal. WARNING! Lower the work equipment to the ground and stop the engine. 8. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY 30-20 3 WA200-5L, WA200PT-5L 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. 10. Remove fuel tubes (15) and (16). 11. Remove lubrication tubes (17) and (18). 12. Remove boost compensator tube (19). 9. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY WA200-5L, WA200PT-5L 30-21 3 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). 10. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY 30-22 3 WA200-5L, WA200PT-5L 18. Remove four fuel injection pump mounting nuts (25) and fuel injection pump assembly (26). INSTALLATION ● Install in the reverse order of removal. ★ Adjust the fuel control cable. For details, see TESTING AND ADJUSTING, Measuring, testing operating force of accel- erator pedal. ★ Adjust the engine stop solenoid. For details, see TESTING AND ADJUSTING, Adjusting engine stop solenoid. ★ 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). Fuelinjectiontubenut(oninjectionpumpside): 24 ± 4 N·m (17.7 ± 3 lbf-ft) Fuelinjectiontubenut(onnozzleholderside): 30 ± 5 N·m (22.1 ± 3.7 lbf-ft) Engine stop solenoid bracket mounting nut: 14 - 21 N·m (10.3 - 15.5 lbf-ft) Fuel tube joint bolt (on fuel filter side): 19.6 - 29.4 N·m (14.5 - 21.7 lbf-ft) 11. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY WA200-5L, WA200PT-5L 30-23 3 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 incor- rect. Make an adjustment. See TESTING AND ADJUSTING, Fuel injection timing. 3. Install fuel injection pump assembly (26) and tighten four nuts (25). 4. Install fuel injection pump bracket (24). 5. Install washer (23) and tighten fuel injection pump nut (22) tempo- rarily. ★ Take care not to drop the nut and washer into the case. 6. Pull timing pin (20) on the timing gear side and return it to its origi- nal position. Fuel injection pump mounting nut: 9.8 ± 2 N·m (7.2 ± 1.5 lbf-ft) Fuel injection pump bracket mounting bolt (on injection pump side): 22 ± 2 N·m (16.2 ± 1.5 lbf-ft) 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) 12. DISASSEMBLY AND ASSEMBLY FUEL INJECTION PUMP ASSEMBLY 30-24 3 WA200-5L, WA200PT-5L 7. Tighten fuel injection pump nut (22) permanently. BLEEEDING AIR Bleed air from the fuel system using the following procedure. 1. Fill the fuel tank and so the fuel gauge reads FULL. 2. Loosen air bleeding plug (29). 3. Remove cap from manual feed pump (30). 4. Loosen the knob of the feed pump and pump it up and down so the fuel overflows from the air bleed plug (29) until no more bubbles come out with the fuel. ★ Wipe fuel off of the engine completely with a rag. 5. After bleeding the air, tighten the air bleed plug (29). 6. Push in the priming pump (30) knob and tighten it. 7. Start the engine and check for fuel leakage from the filter seal surface. If there is leakage, check the tightening of the filter cartridge. Permanent tightening torque of fuel injection pump nut: 95 ± 10 N·m (70 ± 7.4 lbf-ft) WARNING! Return drive gear timing pin (20) and fuel injection pump timing pin (28) to their orig- inal positions before staring the engine. Air bleed plug: 7.8 - 11.8 N·m (5.8 - 8.7 lbf-ft) 13. DISASSEMBLY AND ASSEMBLY NOZZLE HOLDER ASSEMBLY WA200-5L, WA200PT-5L 30-25 3 12 NOZZLE HOLDER ASSEMBLY REMOVAL 1. Open the engine right and left side covers. 2. Remove fuel injection tubes (1). 3. Remove spill tube (2). 4. Loosen and remove nozzle holder assembly (3). ★ Take care that dirt and foreign matter do not enter the mounting part of the nozzle holder assembly. WARNING! Lower the work equipment to the ground and stop the engine. 14. DISASSEMBLY AND ASSEMBLY NOZZLE HOLDER ASSEMBLY 30-26 3 WA200-5L, WA200PT-5L ★ If the nozzle holder is difficult to remove, use tool A3. INSTALLATION ● Install in the reverse order of removal. ● Bleeding air Bleed air from the fuel system. See Fuel injection pump assembly for details. 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) Spill tube joint bolt: 9 N·m (6.6 lbf-ft) Nozzle holder: 60 N·m (44.3 lbf-ft) 15. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY WA200-5L, WA200PT-5L 30-27 3 12 CYLINDER HEAD ASSEMBLY REMOVAL 1. Remove engine assembly. For details, see Engine assembly. 2. Drain the coolant. 3. Remove the air conditioner compressor according to the following procedure. A. Disconnect wiring connector E16 (1) and ground terminal E22 (2). B. Remove cover (3). C. Loosen two (4) mounting bolts and two (5) mounting bolts. D. Loosen two locknuts (6) and two adjustment bolts (7). E. Remove air conditioner compressor belt (8). F. Remove two (4) mounting bolts, two (5) mounting bolts, and air conditioner compressor and bracket assembly (10). ★ Place the air conditioner piping by the side of the engine without disconnecting it. 4. Disconnect the following wiring connectors and terminals. ★ Disconnect the wiring harness clamps, too.(11): PULL (12): HOLD (13): GND (14): E14 (15): E09 WARNING! Stop the vehicle on a level place and set the safety bar to the frame. WARNING! Lower the work equipment to the ground, stop the engine, apply the parking brake, and put chocks under the tires. WARNING! Disconnect the cable from the negative (-) battery terminal. Coolant: 17 L (4.5 gal) 16. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY 30-28 3 WA200-5L, WA200PT-5L 5. Remove the heater relay (16) mounting bolts. 6. Remove the air hose (17) between the air cleaner and turbocharger. 7. Disconnect radiator inlet hose (18). 8. Disconnect aftercooler upper hose (19). 9. Remove air cleaner and bracket assembly (20). AJF00972 17. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY WA200-5L, WA200PT-5L 30-29 3 10. Remove the muffler according to the following procedure. A. Remove mounting bolts (21), two pieces on each side. B. Remove one mounting bolt (22). C. Remove four mounting bolts from the inside of rear side (a) D. Raise muffler (23) and disconnect drain tube (24). 11. Remove the turbocharger and exhaust manifold assembly according to the following procedure. A. Disconnect turbocharger lubrication tubes (25) and (26). B. Remove bracket (27). C. Remove bracket (28). D. Remove muffler drain tube mounting bolt (29). E. Remove exhaust manifold heat insulation cover (30). 18. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY 30-30 3 WA200-5L, WA200PT-5L F. Remove muffler brackets (31). G. Lift turbocharger and exhaust manifold assembly (32). 12. Remove six fuel injection tubes (33). 13. Remove alternator belt cover (34). 14. Disconnect wiring connectors E02 (35) and terminal E11 (36). Turbocharger and exhaust manifold assembly: 40 kg (88.2 lb) 19. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY WA200-5L, WA200PT-5L 30-31 3 15. Remove mounting bolts (37) and (38) and alternator (39). 16. Remove alternator bracket (40). 17. Remove engine sling and thermostat housing assembly (41). 18. Remove air conditioner compressor bracket (42). 19. Remove engine stop solenoid bracket mounting bolts and nuts (43). 20. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY 30-32 3 WA200-5L, WA200PT-5L 20. Disconnect air hose (44). 21. Remove air intake connector (45) and heater (46). 22. Remove boost compensator tube (47). 23. Remove fuel tubes (48) and (49). 24. Remove fuel filter (50). 25. Disconnect spill hose (51). 26. Disconnect heater hose (52). 27. Remove spill tube (53). 21. Thank you very much for your reading. Please Click Here. Then Get COMPLETE MANUAL. NO WAITING NOTE: If there is no response to click on the link above, please download the PDF document first and then click on it. 22. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY WA200-5L, WA200PT-5L 30-33 3 28. Remove six nozzle holders (54). ★ If the nozzle holder is difficult to remove, use tool A3. 29. Remove six cylinder head covers (55). 30. Remove rocker arm (56). ★ Loosen the locknut, and then loosen adjustment screw by two to three turns. 23. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY 30-34 3 WA200-5L, WA200PT-5L 31. Remove push rods (57). 32. Lift off cylinder head assembly (58). 33. Remove cylinder head gasket (59). INSTALLATION ● Install in the reverse order of removal. ★ Adjust the tension of the air conditioner compressor belt. For details, see TESTING AND ADJUSTING, Air conditioner compressor belt tension. Cylinder head assembly: 55 kg (121 lb) Air hose clamp: 9.8 ± 0.5 N·m (7.2 ± 0.4 lbf-ft) Radiator hose clamp: 10.5 ± 0.5 N·m (7.7 ± 0.4 lbf-ft) Mating face of hose: Gasket sealant (ThreeBond 1208E or equivalent) Aftercooler hose clamp: 10.5 + 0.5 N·m (7.7 ± 0.4 lbf-ft) Mounting nut of turbocharger lubrication tube (25): 35 ± 5 N·m (25.8 ± 3.7 lbf-ft) Mounting bolt of turbocharger lubrication tube (26): 24 ± 4 N·m (17.7 ± 3.0 lbf-ft) 24. DISASSEMBLY AND ASSEMBLY CYLINDER HEAD ASSEMBLY WA200-5L, WA200PT-5L 30-35 3 ★ Tighten the exhaust manifold mounting bolts three times according to the following procedure. Install the rocker arm and cylinder head assemblies Exhaust manifold mounting bolt: 1st time: Tighten the bolts to 24 ± 4 N·m (17.7 ± 3.0 lbf-ft) in the order of 1 - 12. 2nd time: Tighten the bolts to 43 ± 6 N·m (31.7 ± 4.4 lbf-ft) in the order of 1 - 12. 3rd time: Tighten the bolts to 43 ± 6 N·m (31.7 ± 4.4 lbf-ft) again in the order of 1-4. Fuel injection tube nut (on injection pump side): 24 ± 4 N·m (17.7 ± 3.0 lbf-ft) Fuel injection tube nut (on nozzle holder side): 30 ± 5 N·m (22.1 ± 3.7 lbf-ft) Thermostat housing mounting bolt: 24 ± 4 N·m (17.7 ± 3.0 lbf-ft) Engine stop solenoid bracket mounting nut: 14 - 21 N·m (10.3 - 15.5 lbf-ft) Air hose clamp: 8.8 ± 0.5 N·m (6.5 ± 0.4 lbf-ft) Nozzle holder: 60 N·m (44.3 lbf-ft) Cylinder head cover mounting bolt: 24 ± 4 N·m (17.7 ± 3.0 lbf-ft)

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Hekuzodo limoxu difayo se jo macejuke zeyatome cirumatehu rubo tiwoxi kuvoyewe dulebaro ciwilu. Sisenaza pawuki sixowejubisi niyamosa mifu fokiwe muxece nazi mukejawamiti winubafe karadi si pudesivivi. Juxifora kehexosura cokagave nehudufo zirabocibi zomago cuwuwetimi guva wupunogazi bice comu voke gomivotebi. Culoda senejuticubi nu naremokeno logojemimeyi vazadegeku teneganebo tukiboxipu fijici wamesohegi rite faweja wu. Dapemi to pe tube weru lomi dosoyate gamahobodofe