

# HYDRAULIC EXCAVATOR

**SHOP  
MANUAL**

**SK200**(LC)-6E  
**SK210**(LC)-6E(S)  
model **SK210**NLC-6ES

## INDEX

1	SPECIFICATION SECTION
2	MAINTENANCE SECTION
3	SYSTEM SECTION
4	DISASSEMBLY SECTION
5	TROUBLESHOOTING
6	ENGINE SECTION
7	PROCEDURES FOR OPTIONAL ATTACHMENT

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PROCEDURES  
FOR OPTIONAL ATTACHMENT

MAINTENANCE SPECIFICATION

MAINTENANCE

SYSTEM

DISASSEMBLING

TROUBLESHOOTING

E/G

OPT.

**KOBELCO**

Book code No. S5YN0017E



## WARNING

# SAFETY

## WARNING

The proper and safe lubrication and maintenance for this machine, recommended by KOBELCO are outlined in the OPERATION & MAINTENANCE GUIDE for this machine.

Improper performance of lubrication or maintenance procedures is dangerous and could result in injury or death. Read and understand the OPERATION & MAINTENANCE GUIDE before performing any lubrication or maintenance.

The serviceman or mechanic may be unfamiliar with many of the systems on this machine. This makes it important to use caution when performing service work. A knowledge of the system and or components is important before the removal or disassembly of any component.

Because of the size of some of the machine components, the serviceman or mechanic should check the weights noted in this Manual. Use proper lifting procedures when removing any components.

Following is a list of basic precautions that should always be observed.

1. Read and understand all Warning plates and decals on the machine before operating, lubricating or repairing this product.
2. Always wear protective glasses and protective shoes when working around machines. In particular, wear protective glasses when pounding on any part of the machine or its attachments with a hammer or sledge. Use welders gloves, hood / goggles, apron and other protective clothing appropriate to the welding job being performed. Do not wear loose-fitting or torn clothing. Remove all rings from fingers when working on machinery.
3. Disconnect battery and discharge any capacitors before starting to work on machine. Hang "Do Not Operate" tag in the Operator's Cab.
4. If possible, make all repairs with the machine parked on a level, hard surface. Block machine so it does not roll while working on or under machine.
5. Do not work on any machine that is supported only by lift jacks or a hoist. Always use blocks or jack stands to support the machine before performing any disassembly.

## WARNING

Do not operate this machine unless you have read and understand the instructions in the OPERATORS MANUAL. Improper machine operation is dangerous and could result in injury or death.

6. Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system that utilizes pressure.
7. Lower the bucket, blade, ripper or other attachment to the ground before performing any work on the machine. If this cannot be done, make sure the bucket, blade, ripper or other attachment is blocked correctly to prevent it from dropping unexpectedly.
8. Use steps and grab handles when mounting or dismounting a machine. Clean any mud or debris from steps, walkways or work platforms before using. Always face machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms to perform safe repair operations.
9. To avoid back injury, use a hoist when lifting components which weigh 23 kg (50 lbs) or more. Make sure all chains, hooks, slings, etc., are in good condition and are in the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.
10. To avoid burns, be alert for hot parts on machines which have just been stopped and hot fluids in lines, tubes and components.
11. Be careful when removing cover plates. Gradually back off the last two bolts or nuts located at opposite ends of the cover or device and pry cover loose to relieve any spring or other pressure, before removing the last two bolts or nuts completely.
12. Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. The danger is even greater if the machine has just been stopped because fluids can be hot.

 **WARNING**

13. Always use tools that are in good condition and be sure you understand how to use them before performing any service work.
14. Reinstall all fasteners with same part number. Do not use a lesser quality fastener if replacements are necessary.
15. Repairs, which require welding, should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and knowledgeable in welding procedures. Determine type of metal being welded and select correct welding procedure and electrodes, rods or wire to provide a weld metal strength equivalent at least to that of parent metal. Always disconnect battery during welding operations to protect sensitive electric equipment.
16. Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will it be damaged in operation by contacting sharp corners, or by rubbing against some object or hot surface. Do not connect wiring to a line containing fluid.
17. Be sure all protective devices including guards and shields are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution.
18. Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fires. Do not bend or strike high-pressure lines or install ones, which have been bent or damaged. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Pinhole (very small) leaks can result in a high velocity oil stream that will be invisible close to the hose. This oil can penetrate the skin and cause personal injury. Use cardboard or paper to locate pinhole leaks.
19. Tighten connections to the correct torque. Make sure that all heat shields, clamps and guards are installed correctly to avoid excessive heat, vibration or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure must be installed correctly.
20. Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed-rotating component that has been damaged or altered should be checked for balance before reusing.
21. On track-type machines, be careful when servicing or separating tracks. Chips can fly when removing or installing a track pin. Wear safety glasses and long sleeve shirts. Track can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both tracks are disengaged from the sprockets. Block the machine to prevent it from moving.

SK200(LC)-6E  
 SK210(LC)-6E(S) Index of Shop Manual  
 SK210NLC-6ES

Book Code No. Distribution Year—Month		Index No	Title	
S5YN0117E 2004-11		<b>SPECIFICATION</b>	OUTLINE	<b>YN01</b>
S5YN0217E 2004-11			SPECIFICATION	<b>YN02</b>
S5YN0317E 2004-11			ATTACHMENT DIMENSION	<b>YN03</b>
S5YN1117E 2004-11		<b>MAINTENANCE</b>	TOOLS	<b>YN11</b>
S5YN1217E 2004-11			STANDARD MAINTENANCE TIME SCHEDULE	<b>YN12</b>
S5YN1317E 2004-11			MAINTENANCE STANDARD AND TEST PROCEDURE	<b>YN13</b>
S5YN2117E 2004-11		<b>SYSTEM</b>	MECHATRO CONTROL SYSTEM	<b>YN21</b>
S5YN2217E 2004-11			HYDRAULIC SYSTEM	<b>YN22</b>
S5YN2317E 2004-11			ELECTRICAL SYSTEM	<b>YN23</b>
S5YN2417E 2004-11			COMPONENTS SYSTEM	<b>YN24</b>
S5YN2517E 2004-11			AIR-CONDITIONER SYSTEM	<b>YN25</b>
—			—	
S5YN3117E 2004-11		<b>DISASSEMBLING</b>	DISASSEMBLING AND ASSEMBLING	<b>YN31</b>
S5YN3217E 2004-11			ATTACHMENT	<b>YN32</b>
S5YN3317E 2004-11			UPPER STRUCTURE	<b>YN33</b>
S5YN3417E 2004-11			TRAVEL SYSTEM	<b>YN34</b>
S5YN4117E 2004-11		<b>TROUBLESHOOTING</b>	MECHATRO CONTROL	<b>YN41</b>
S5YN4217E 2004-11			HYDRAULIC	<b>YN42</b>
S5YN4317E 2004-11			ELECTRICAL	<b>YN43</b>
S5YN4417E 2004-11			ENGINE	<b>YN44</b>
S5YN5117E 2004-11		<b>E/G</b>	ENGINE	<b>YN51</b>
S5YN6303E 2004-11		<b>OPT</b>	MOUNTING THE BREAKER AND NIBBLER & BREAKER	<b>YN63</b>
YN10-38001~ YQ10-05501~			APPLICABLE MACHINES	



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