KOBELCO

SHOP MANUAL

HYDRAULIC EXCAVATOR

OPTIONAL EQUIPMENT - NIBBLER AND BREAKER

SK200-3
SK200LC-3

S3YN7106-01 NA

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SHOP MANUAL

SK200V
SK200LCV

YN13

MOUNTING THE BREAKER AND NIBBLER & BREAKER

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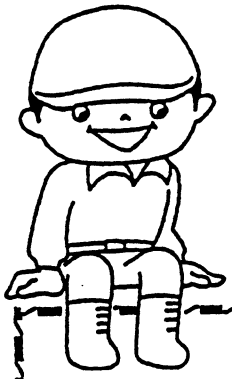

PREFACE

This manual deals with items necessary for changing a standard specification machine SK200V, SK200LCV to one with a breaker specification or a nibbler & breaker specification. Follow the procedure given here in when changing the machine specification in the field.

Models	Applicable Machines	Notes	Models	Applicable Machines	Notes
SK200 V	YN23301~				
SK200LC V	YQ02801~				

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Name of Publication

SK200 v, SK200LC v SHOP MANUAL'S

Book code No. S5YN0008E①

Applicable Machines **SK200 v** **YN23301~**

SK200LC v **YQ02801~**

Title	New	Old	Remarks
HYDRAULIC EXCAVATOR	S5YN0008E①	S5YN0008E	Revised
GENERAL INDEX	—	—	Revised
MAINTENANCE STANDARDS AND TEST PROCEDURES	S5YN0408E①	S5YN0408E	Revised
HYDRAULIC SYSTEM	—	—	Revised P4~P15

NOTES

Attention

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Name of Publication

SK200v, SK200LCv SHOP MANUAL'S

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Applicable Machines **SK200v** **YN23301~**
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Title	New	Old	Remarks
HYDRAULIC EXCAVATOR	S5YN0008E②	S5YN0008E①	Revised
COMPONENTS INDEX	S5YN3007E①	S5YN3007E	Revised
ENGINE	S5500025E	—	Add

NOTES

1. SUMMARY

1.1 GENERAL PRECAUTIONS

(1) Applications of Breakers or Nibblers & Breaker

Breaker piping ..... Applicable only when a breaker is mounted.

Nibbler & breaker piping ..... Applicable only when a nibbler and a breaker are mounted.

(2) Modifying a Breaker and a Nibbler & Breaker

There are specific procedures to be followed when modifying a breaker and a nibbler & breaker. Therefore, when they are to be modified at our service shop, contact the nearest breaker and nibbler manufacturer's office, and obtain instructions, so that you install the pipes and handle the machinery correctly.

(3) Differences Between a Breaker Circuit and a Nibbler & Breaker Piping

- Breaker Piping

  There is a single oil flow from pump P1 to the breaker. The oil returns to the hydraulic tank directly via the line filter. The flow is uni-directional.

- Nibbler Piping (for conflux)

  The oil discharged from pumps P1 and P2 combines together in the nibbler control valve and switches its flow and it actuates the nibbler. The flow is bidirectional.

- Nibbler & Breaker piping (for single flow)

  The nibbler is basically used in the conflux circuit, but if you wish to use the nibbler and the breaker by turns, choose the single pump flow mode.

1.2 BASIC DISPOSITION TO BE TAKEN WHEN MOUNTING

When mounting a breaker and a nibbler, always execute the following seven items:

(1) Install an option valve to the main control valve, to use the compressed oil from pump P1 for the breaker and nibbler.

(2) Always use a line filter to the low pressure line (return circuit) of the breaker and return the oil directly to the tank.
If the return oil of the breaker is brought back to the control valve, the pulsation of the breaker is conveyed to the oil cooler and causes the machine to break down.

(3) Install a control valve, for switching the flow direction to the nibbler cylinder, to the nibbler-attachment device.
Also, install piping between the main control valve to use the compressed oil from pump P2 through the main control valve.

(4) For a machine equipped with a breaker and a nibbler & breaker, install a pressure sensor and apply electric wiring to the machine.

(5) Install a selector valve, for switching the oil flow direction when using the breaker and the nibbler, to the nibbler & breaker attachment device.

(6) Reinforce the arms of the nibbler & breaker attachment with plates.

(7) Arms longer than the standard one can not be used.

⚠ Do not fail to observe the seven items above when the breaker manufacturer performs piping work without using our genuine parts.

1.3 LAYING OF PIPING

(1) **Breaker specification**

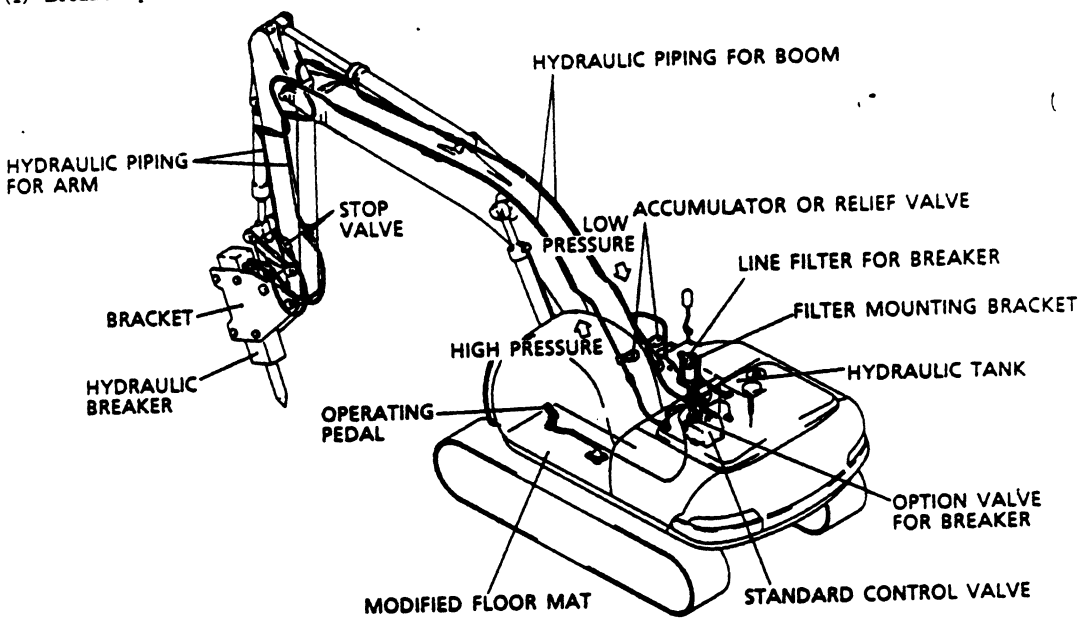


Fig. 1-1 Outside view of breaker-attached machine

(2) **Nibbler & breaker specification**

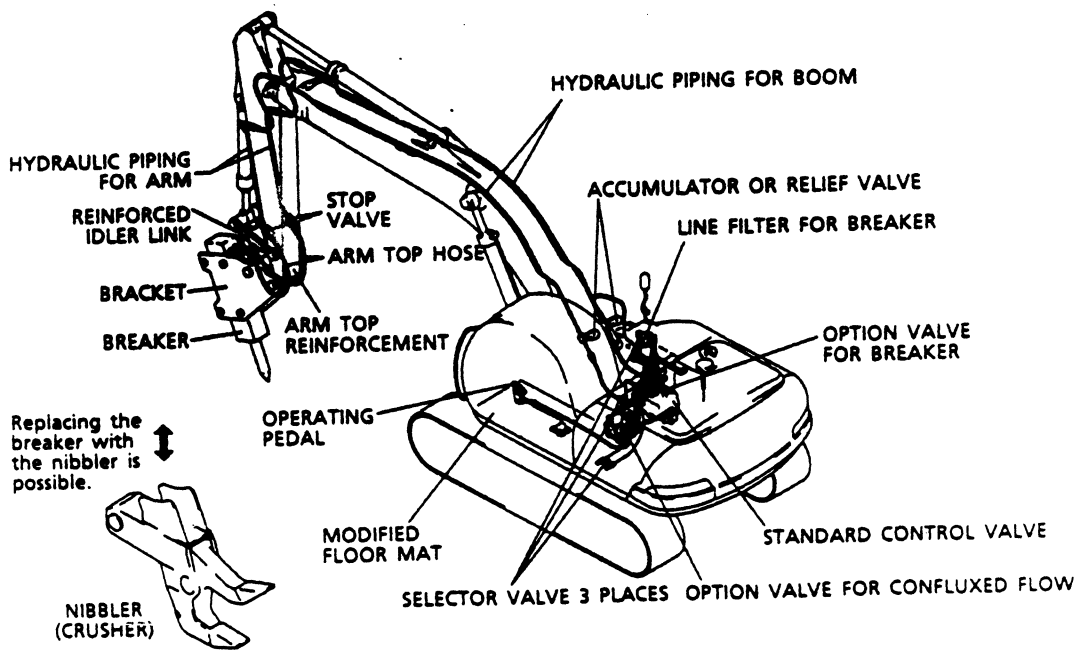


Fig. 1-2 Outside view of Nibbler & Breaker-attached machine

1.4 MODIFICATION ITEM

The main modification items when modifying a standard machine into a breaker and N & B (Nibbler & Breaker) specification machine are as follows:

Table 1

No.	Item	Breaker specification	Page	Nibbler & Breaker specification	Page
1	Modification of floor mat	· Mat cutting for pedal	15	· Mat cutting for pedal	31
2	Modification of upper frame	· Weld a bracket for the line filter. · Weld a tapped block for the installation of piping.	15	· Weld a bracket for the line filter. · Weld a tapped block for the installation of piping.	15
3	Modification of hydraulic piping for upper	· Install an option valve. · Install the line filter. · Install hydraulic piping.	16 ∫ 18	· Install an option valve. · Install the line filter. · Install the control valve (nibbler). · Install hydraulic piping	31 ∫ 37
4	Modification of remote control	· Install the pilot valve and the operating pedal. · Install the pressure sensor. · Install the hydraulic hoses.	19 ∫ 20	· Install the pilot valve and the operating pedal. · Install the pressure sensor. · Install the hydraulic hoses.	38 ∫ 42
5	Electric wiring	· Install the harness for the pressure sensor.	22	· Connect the pressure sensor to the existing harness.	43
6	Modification of the 5.65m (18ft-6in) boom Install the hydraulic piping for 5.65m (18ft-6in) boom	· Weld the tapped block for piping. · Install piping.	23 ∫ 24	· Weld the tapped block for piping. · Install piping.	23 ∫ 24
7	Modification of 2.94m (9ft-8in) arm	· Weld the tapped block and the brackets.	25 ∫ 26	· Weld the tapped block and the brackets, and reinforce the top end of the arm.	44 ∫ 50
	Modification of 2.4m (7ft-10in) arm	· Weld the tapped block and the brackets.	27	· Weld the tapped block and the brackets, and reinforce the top end of the arm.	51 ∫ 52
	Install the hydraulic piping for 2.94m (9ft-8in) arm	· Install piping.	28	· Install piping.	28
	Install the hydraulic piping for 2.4m (7ft-10in) arm	· Install piping.	29	· Install piping.	29
	Connector assy	· Install the stop valve to the arm top.	30	· Install the stop valve to the arm top.	54
	Reinforcing the idler link	———	—	· Reinforcing the idler link	54

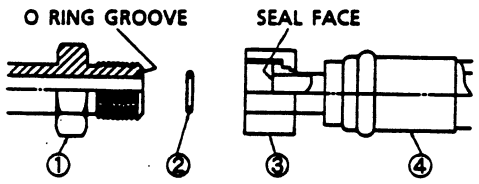
1.5 FOLLOW THE PRECAUTIONS BELOW WHEN MOUNTING HOSES, PIPING, AND JOINTS

(1) Be careful not to damage the hoses, tubes, and joints and prevent foreign materials from entering in them.
Perform dustproof treatment for each part upon necessity.

(2) Clean the hoses, tubes, joints, and surroundings. Remove the cleaning solvent completely and dry them before installing.

(3) Do not use flawed or deteriorated O rings. If a part is used which has the same dimensions but is made of different material and has a different hardness from the specified one, this may cause oil leakage or greatly shorten the life of the machine. Use only the specified parts.

1.6 HANDLING OF THE O RING SEAL AND JOINT



CONSTITUTION
① JOINT ② O RING
③ UNION NUT ④ HOSE AND TUBE

The O ring ② is attached to the end face of the connector ① to seal pressure oil at the joint.

(1) Use a new O ring ② when reassembling.
(2) Confirm that the O ring ② is fitted in the O ring groove of the joints ① properly. Tighten the union nut ③.

NOTE : If the union nut ③ is tightened when the O ring ② comes off the groove, the O ring may become damaged and oil leakage will result.

(3) Be careful not to damage the O ring groove of the joint ① and the seal face of the hose ④ when installing.

NOTE : If they become damaged, O ring damage or oil leakage will result.

(4) If the union nut ③ is loose, and oil leakage, do not retighten it. Confirm that the O ring is set in the O ring groove properly ; then tighten the union nut ③.

Supplementary explanation :
See the section TIGHTENING THE TORQUE OF JOINTS AND HYDRAULIC HOSES on the following page for the tightening torque.

1.7 TIGHTENING THE TORQUE OF JOINTS AND HYDRAULIC HOSES

(1) ORS coupling (O ring sealing type)

	Size	Spanner mm	Tightening torque kgf·m (ft·lbs)
Hose mouth ring and coupling	1-14	30	14±1.4 (101±10)
		32	
	1-3 / 16-12	36	18±1.8 (130±13)
		41	
	1-7 / 16-12	41	21±2.1 (151±15)
		46	

NOTE : The tightening torque mentioned in the table applies under the condition that the couplings are lubricated.

(2) Flareless-type coupling

Tube size Outer diameter × Thickness mm (in)	Spanner mm	Tightening torque kgf·m (ft·lbs)
10×1.5 (0.39×0.06)	19	5±1 (36± 7)
15×2.0 (0.59×0.08)	27	12±1.2 (87± 9)
18×2.5 (0.71×0.10)	32	15±1.5 (108±11)
22×3.0 (0.87×0.12)	36	22±2.2 (159±16)
28×4.0 (1.10×0.16)	41	28±2.8 (202±20)
35×5.0 (1.38×0.20)	55	45±4.5 (325±33)

(3) O ring type coupling

Screw diameter (PF)	Spanner mm	Tightening torque kgf·m (ft·lbs)
1/8	14	1.7±0.2(12± 1)
1/4	19	3.7±0.2(27± 1)
3/8	22	7.5±0.5(54± 4)
1/2	27	11.0±1 (79± 7)
3/4	36	16.5±1.5(119±11)
1	41	26.0±1 (188± 7)
1 1/4	50	40.0±4 (290±29)

(4) Hydraulic hose

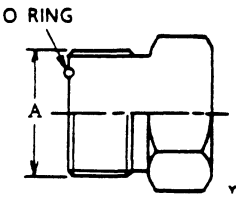
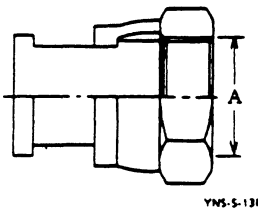
Screw diameter (PF)	Spanner mm	Tightening torque kgf·m (ft·lbs)
1/8	17	3.0±0.5(22± 4)
1/4	19	3.0±0.5(22± 4)
3/8	22	5.0±0.5(36± 4)
1/2	27	8.0±0.5(58± 4)
3/4	36	12.0±1 (87± 7)
1	41	14.0±1.5(101±11)

(5) Hydraulic hose (flange type)

Cap screw (hexagon socket head)	Spanner mm	Tightening torque kgf·m (ft·lbs)
M 6	5	3.0±0.5(22± 4)
M 8	6	5.0±0.5(36± 4)
M10	8	6.0±0.5(43± 4)
M12	10	8.5±0.5(61± 4)
M14	12	10.5±1.0(76± 7)
M16	14	15.0±1.5(108±11)

1.8 ORS BLIND PLUG (O RING SEAL TYPE)

The blind plugs when assembled are as follows :

Type	Screw thread dimension A	Service	Plug Part No.	O ring Part No.
Male 	1"-14	Hose	YN01H01001P1	ZD12A01600
	Pipe Diameter Ø21.7 (0.85")	Hose diameter 5/8" equivalent	——	——
	1"-3/16	Hose	YN01H01002P1	ZD12A01800
	Pipe Diameter Ø27.2 (1.07")	Hose diameter 3/4" equivalent	——	——
	1"-7/16	Hose	YN01H01003P1	ZD12A02100
	Pipe Diameter Ø34.0 (1.34")	Hose diameter 1" equivalent	——	——
Female 	1"-14	Tube	YN01H01004P1	——
	Pipe Diameter Ø21.7 (0.85")	——	——	——
	1"-3/16	Tube	YN01H01005P1	——
	Pipe Diameter Ø27.2 (1.07")	——	——	——
	1"-7/16	Tube	YN01H01006P1	——
	Pipe Diameter Ø34.0 (1.34")	——	——	——