KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK100

SK120LC

Applicable: SK100 YW-2801~
Applicable: SK120LC LP-5201~

S5LP0004E-02 02/93

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SHOP MANUAL

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SPECIFICATION

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SHOP MANUAL

SK100
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TROUBLESHOOTING

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DRIVE SYSTEM

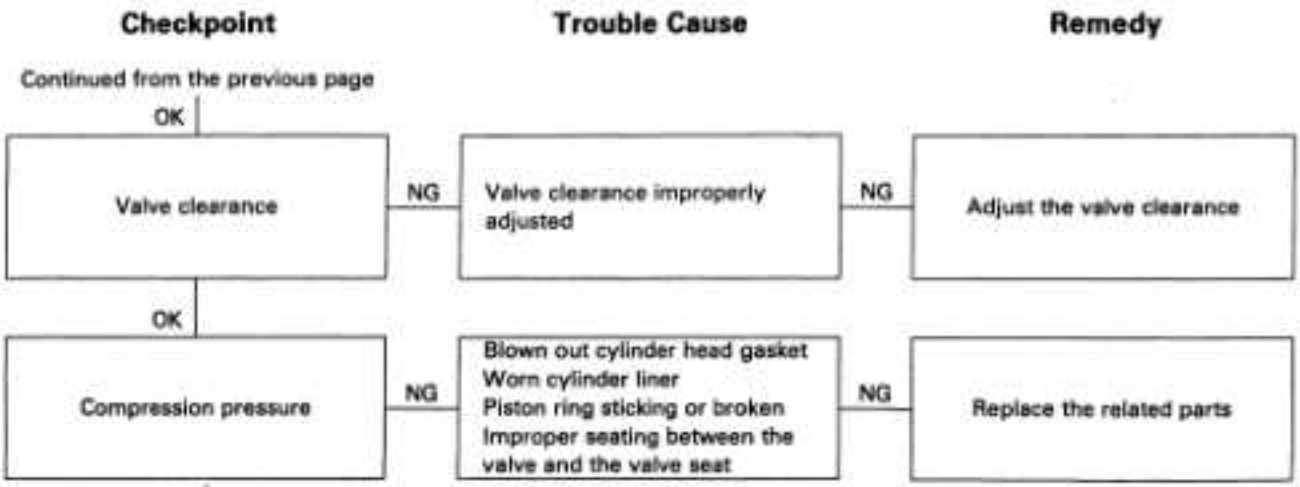
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UNSTABLE LOW IDLING



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PREFACE

This is a composite valve that holds the circuit pressure within safe ranges by means of relief valves, changeover valves, conflux valves and sequence valves, in addition to changing the control directions of the operating part (actuators) as circuits are changed over.

Models	Applicable Machines	Notes	Models	Applicable Machines	Notes
SK100	YW-04601~	Spec 1			
SK120	LP-08001~	Spec 2			
SK120LC	YP-01801~	Spec 2			

Revision	Date of Issue	Remarks
First edition	December,1991	S5130739E K

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(5) Then determine dimension "D" of hold flange (3).

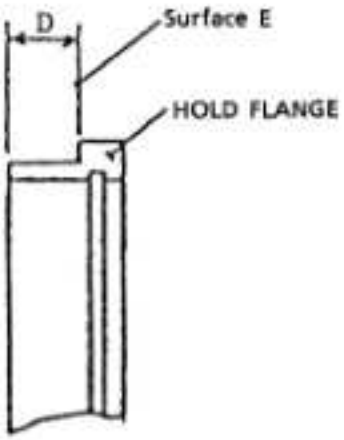


Fig. 37

(6) After measurement steps 1–5, adjust hold flange (3) as follows:
Dimension "C" is the specified dimension of the hold flange.

1) When actual dimension "D" of hold flange (3) is smaller than a specified value;
Remove surface E of hold flange (3) to a specified value by lathe or something.

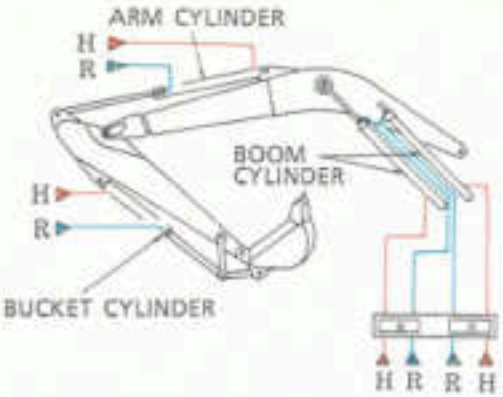
2) When actual dimension "D" of the hold flange (3) lies within a specified tolerance;
Use the hold flange as it is.

3) When actual dimension "D" of the hold flange is larger than a specified value;
Replace the flange with a new spindle ass'y.
Hold flange (3) is always provided with allowance for adjustment.

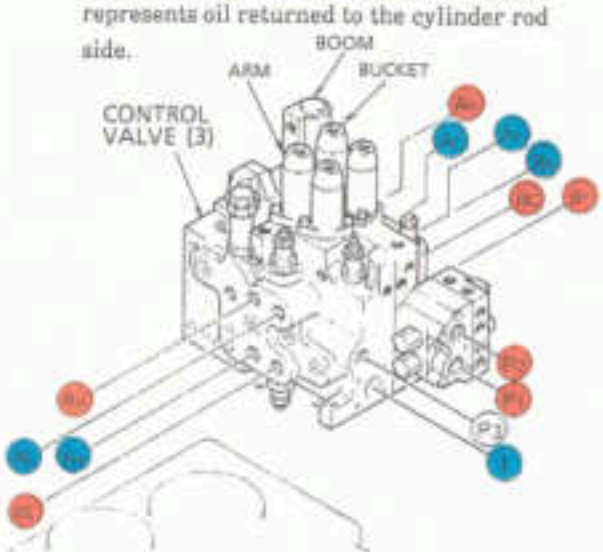
☞ • Execute disassembly and assembly once again.

(7) Remove the clearance measuring jig from spindle (2).

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☞ The orange color shows oil supplied to the cylinder head part, whereas the blue color represents oil returned to the cylinder rod side.



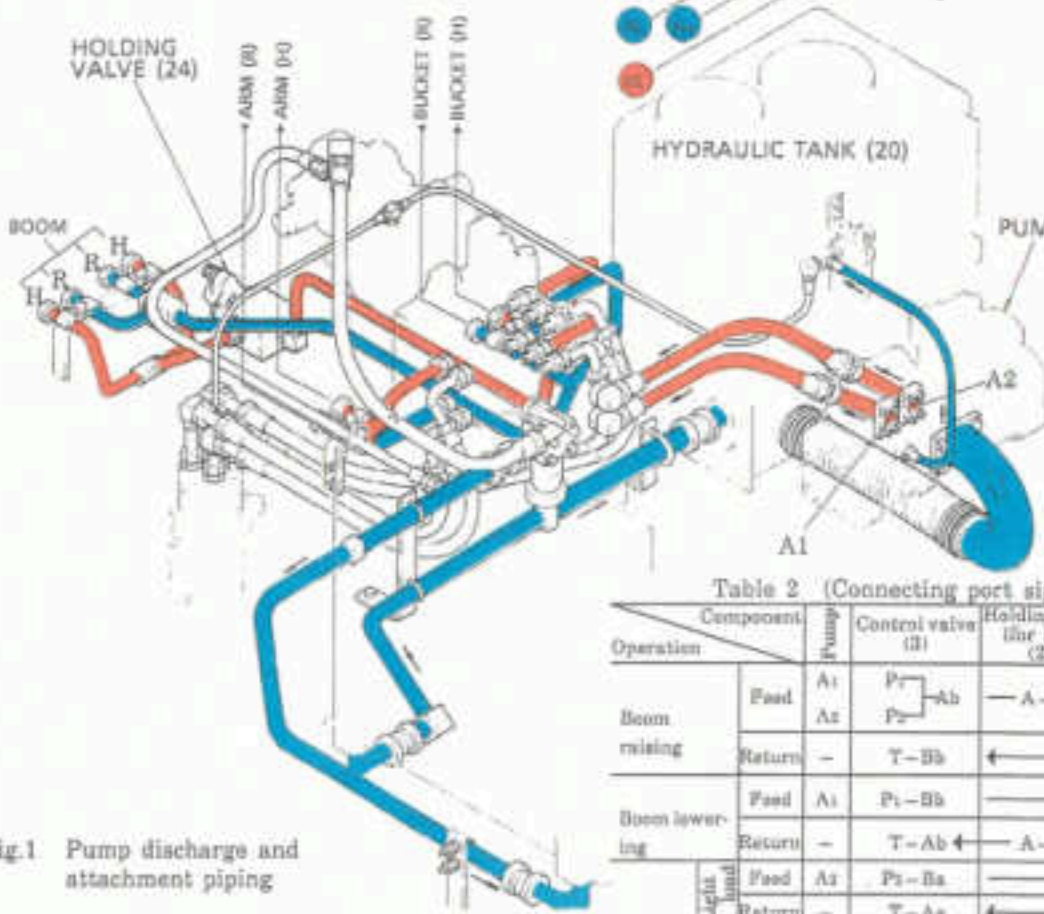


Fig.1 Pump discharge and attachment piping

Table 1 (Connecting port signs)

Component / circuits	Hydraulic tank	Pump (1)	Control valve (3)
Feed	Tank	A1 → P1 A2 → P2	
Return	Tank	Oil cooler → T	

Table 2 (Connecting port signs)

Operation		Component: Pump	Control valve (3)	Holding valve (for lock) (24)	Cylinder
Boom raising	Feed	A1 A2	P1 → Ab P2	A – B	H H
	Return	–	T – Bb		R R
Boom lowering	Feed	A1	P1 – Bb		R R
	Return	–	T – Ab	A – B	H H
Arm digging (Light load)	Feed	A2	P2 – Ba		H
	Return	–	T – Aa		R
Arm digging (Heavy load)	Feed	A1 A2	P1 → Ba P2		H
	Return	–	T – Aa		R
Arm extension	Feed	A1 A2	P1 → Aa P2		R
	Return	–	T – Ba		H
Bucket digging	Feed	A1	P1 – BC		H
	Return	–	T – AC		R
Bucket discharge	Feed	A1	P1 – AC		R
	Return	–	T – BC		H

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2. OPERATION

2.1 SPECIAL FEATURES OF THE TRAVEL SYSTEM

The travel system of this machine has the following special features.

1) Hydraulic pilot operating method
   The control valve spool is operated by the proportionate secondary pilot pressure of the pilot valve direct-coupled to the travel operating lever.
2) 2-speed travel
   Low and high speeds are selected if the momentary switch for the travel 2-speed is pressed.
3) Straight travel
   A straight travel circuit is built in so straight travel action can be performed even in composite action with the attachment.
4) The highest travel relief pressure
   A boost pressure travel function is provided so travel power at the highest travel relief pressure continues to the last.
5) Independent travel
   In the D mode, travel action operates by the No.2 pump only, so that the independent travel mode at a fixed travel speed is selected even though composite operation is performed.
6) Auto accel

2.2 HYDRAULIC FLOW

(1) Piping between the hydraulic oil tank and the control valve (see Table 2 and Figure 2)

Table 2 (Connecting port signs)

Component / Circuit	Oil Function: Tank (20)	Pump (1)	Control valve (3)
Feed	Tank	A_1 → P_1	
		A_2 → P_2	
Return	Tank	Oil cooler	T

(2) Piping between the control valve and the brake valve (see Table 2 and Figure 2)

Table 3 (Connecting port signs)

Action	Valve	Control valve (3)	Swivel joint (10) Upper	Swivel joint (10) Lower	Brake valve (6) LH	Brake valve (6) RH
RH Advance	Feed	Br	D	D	–	B
	Return	Ar	B	B	–	A
LH Advance	Feed	Bℓ	C	C	A	–
	Return	Aℓ	A	A	B	–

The orange color in the figure represents pressure circuits while the blue color indicates tank circuits.

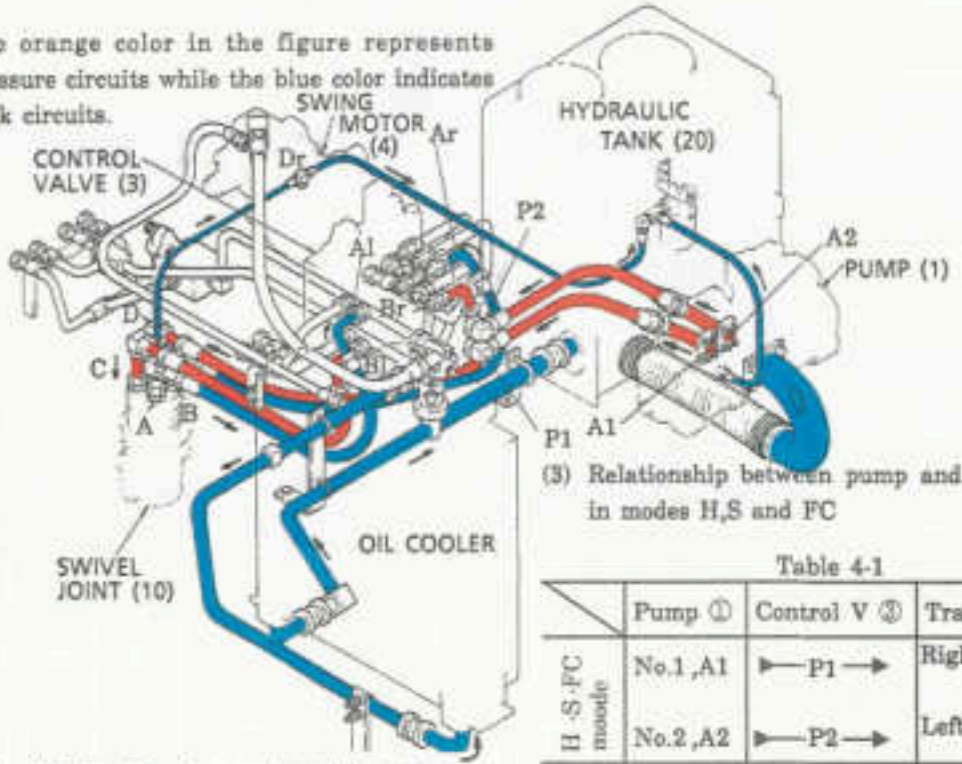


Fig. 2-1 Oil flow for advance travel in modes H, S and FC

(3) Relationship between pump and travel motor in modes H,S and FC

Table 4-1

	Pump ①	Control V ③	Travel motor ⑤
H·S·FC mode	No.1 ,A1	⟵P1⟶	Right (advance and retreat)
	No.2 ,A2	⟵P2⟶	Left (advance and retreat)

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4.2 TRAVEL CIRCUIT

This travel circuit is featured by traveling straight, boost pressure travel, 2-speed travel, 1-speed automatic travel and independent travel functions. Steering travel is actuated by a control cable, differing from other pilot control system.

4.2.1 SIMPLE TRAVEL 2ND SPEED (FORWARD)

(1) Pilot circuit

1) Travel 2nd changeover signal

When the Tortoise & Hare mark on the right-hand travel lever is pressed, changeover to 2nd speed travel is actuated in the solenoid valve (28), directing pilot pressure oil to port A2. Pressurized oil from port A2 is directed to port D of the travel variable-displacement motor (5) to drive the travel motor at travel 2nd speed. If the travel motor driving pressure becomes excessively high, the speed will automatically return to travel 1st speed.

2) Changing the travel priority valve to ordinary work function

Pilot pressure from port A1 of the solenoid valve (23) enters port PO of the control valve, and switches the travel priority valve to the normal function mode.

3) The automatic deceleration switch

When travel operation is performed, the travel converter operates as the travel spool moves. The primary pressure admitted to the PSc port by the transfer of the travel converter is connected through the Pi port. The pressure is then admitted from the Pi port to the PiT port of the independent travel valve by way of piping. Auto accel works when the auto accel switch is turned on after the PiT port connects to the PDS port in the travel independent valve.

(2) Main circuit

The flow of the oil that drives the travel motors is as follows. Oil from the No.1 pump passes through the travel priority valve in the control valve (3), and comes out of port Br in the control valves travel section.

The oil passes through the swivel joint (10) and enters port A of the brake valve, mounted on the right-hand travel motor (5).

The moment the brake valve is changed over by hydraulic pressure, the pressure releases the parking brake and permits the pressure to run into the motor.

Oil from the No.2 pump drives the left-hand travel motor in the same way, except that the oil is directed directly to the travel spool without passing through the travel priority valve in the control valve.

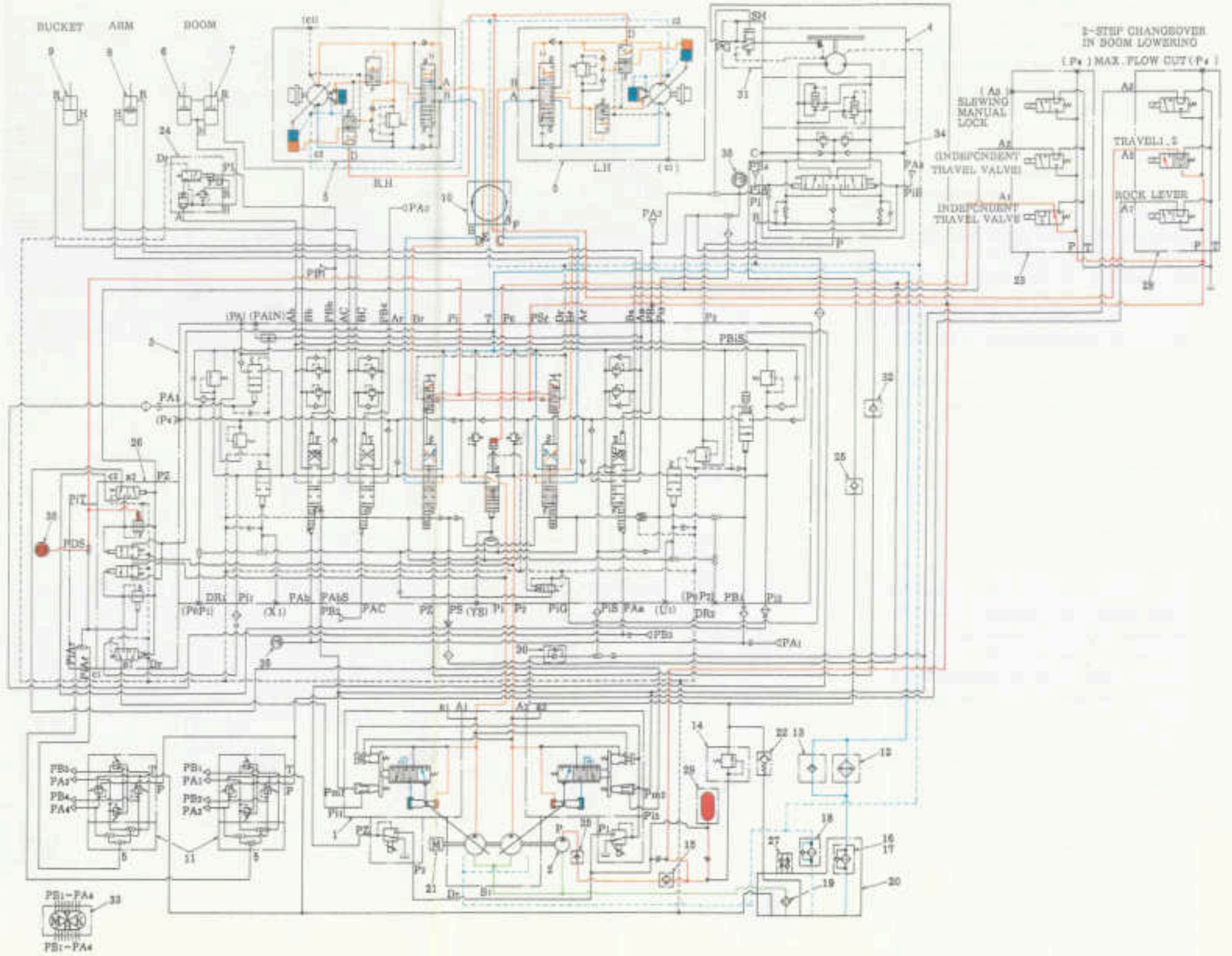


Fig. 4 Simple Travel in 2nd speed (forward)

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