KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK400 IV

SK400LC IV

Applicable: SK400 IV YSJ00001~
Applicable: SK400LC IV YSU0001~

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SHOP MANUAL YSU · YSJ

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3. CONNECTION TABLE OF HARNESSES ACCORDING TO WIRE NUMBERS

(1) HOW TO USE CONNECTION TABLE OF HARNESS

1) Search a number wiring

Search the failed electric device in the electric diagram and find the number of wiring.

2) Search a harness name and connector name

Find the number of wiring in Connection Table of Harness.

Then search the name of harness and connector.

3) Search the location of a wiring number

4) Confirm the color of wire and gauge on the actual machine.

3.1 North America & Europe Spec.

No.	Gauge& Color of wire	From		Connector at inst. Panel	To.	
		Equipment	No.	Name of connector	No.	Equipment
4	0.75RG	Fuse box	E-1	18PAM-HD — CB104	E-4	Cigarette lighter
5	0.75YR	↑	E-1	18PAM-HD — 13PAM-DS		Inst. Panel L/R
6A	0.75L			J/B-15PAF — 18PAM-HD	E-1	Fuse box
6B	↑			— 17PAF-PA	R-6	Relay assy.
6C	↑			— 17PAF-PA	R-6	↑
6D	↑			— 17PAF-PA	R-6	↑
7	0.75GY	Fuse box	E-1	18PAM-HD — 13PAM-DS		Inst. Panel L/R
8	0.75RL	↑	E-1	18PAM-HD — 18PAF-AMP	C-2	Cluster gauge
9A	0.75RB			J/B-10PAF — 18PAM-HD	E-1	Fuse box
9B	↑			— 6PAF		Cab
9C	↑			— 20PAM-HD		Side L
10A	1.25WR	Fuse box	E-1	18PAM-HD — J/C-ORANGE		
10B	↑	Inst.Panel L/R		13PAM-DS —		
10C	↑	Key switch relay	R-5	5PAF —		
11A	0.75G	Fuse box	E-1	18PAM-HD — J/C-ORANGE		
11B	↑	Controller	C-1	18PAF-AMP —		
11C	↑	For Check		4PAF —		
12A	0.75RY			J/B-15PAF — 18PAM-HD	E-1	Fuse box
12D	↑			— 13PAM-DS		Inst. Panel L/R
12E	↑			— 4PAF	R-10	Travel Alarm Relay
12F	↑			— 12PAM-HD		Side R
13	0.75Y	Fuse box	E-1	18PAM-HD — 18PAF-AMP	C-2	Cluster gauge

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Unit: mm

Maintenance item			Nominal value (Basic diameter in [ ])	Limit	Remedy and remarks
Clearance between piston ring grooves and piston rings	1st compression ring		0.02 to 0.10	0.25	Replace piston ring or piston
	2nd compression ring	8DC9	0.05 to 0.08	0.25	
		8DC9-T, 9-TL, 9-TC	0.07 to 0.10		
	3rd compression ring	8DC9	0.05 to 0.08	0.15	
		8DC9-T, 9-TL, 9-TC	0.07 to 0.10		
	Oil ring		0.03 to 0.06	0.15	
Piston ring end gap		1st ring, Oil ring, 3rd ring	0.4 to 0.6	1.5	Replace
		2nd ring	0.4 to 0.55		
Clearance between piston pin and piston pin hole			[50] 0.01 to 0.02	0.1	Replace piston or piston pin
Clearance between piston pin and connecting rod small end bushing			[50] 0.01 to 0.05	0.1	Replace bushing
Connecting rod bend and torsion			–	0.05 or less	Correct or replace
Connecting rod bearing span when free			–	Less than 95.5	Replace
Connecting rod bearing-to-crankshaft pin clearance			[90] 0.05 to 0.11	0.25	Replace bearing
Main bearing-to-crankshaft journal clearance			[100] 0.06 to 0.12	0.25	Replace bearing
Main bearing span when free			–	Less than 106.5	Replace
Crankshaft pin and journal		Roundness	0.01 or less	0.08	Grind to undersize
		Cylindricity	0.006 or less	–	
Crankshaft bend			0.03 or less	0.1	Correct or replace
Valve clearance (when cold)		Inlet	0.4	–	Adjust
		Exhaust	0.6	–	

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2. SPECIFICATIONS

<6D2>

Item		Specification	
Cooling system		Water-cooling forced circulation type	
Coolant quantity (Engine-proper only)		6D22, 22-T, 24-T	Approx. 22 L
		6D22-TC, 24-TC	Approx. 24 L
Water pump	Type	Centrifugal type	
	Drive method	V-belt	
Radiator	Type	Tube-and-corrugated-fin type or Tube-and-plate-fin type	
Thermostat	Type	Wax pellet/bottom bypass type	
	Valve opening temperature x Q'ty	Without jiggle valve: 76.5°C x 2	
Cooling fan		Suction type or blower type	
V-belt	Type x Number of belts	Without fan drive	Low edge cog B type x 1 or B type x 2
		With fan drive	Low-edge cogged type B x 1 (for water pump) Low-edge cogged type C x 2 (for alternator)
			Low-edge cogged type B x 1 (for water pump) Low-edge cogged type B x 2 (for alternator)

<8DC>

Item		Specification	
Cooling system		Water-cooling forced circulation type	
Coolant quantity (Engine-proper only)		8DC9, 9-T, 9-TL	Approx. 25 L
		8DC9-TC	Approx. 28 L
Water pump	Type	Centrifugal type	
	Drive method	V-belt	
Radiator	Type	Tube-and-corrugated-fin type or Tube-and-plate-fin type	
Thermostat	Type	Wax pellet/bottom bypass type	
	Valve opening temperature x Q'ty	8DC9, 9-T, 9-TC	With jiggle valve: 82°C x 2
		Option: 8DC9-T, 9-TL	With jiggle valve: 82°C x 2 Without jiggle valve: 82°C x 1
		Option: 8DC9	Without jiggle valve: 76.5°C x 2
		8DC9-TL	With jiggle valve: 82°C x 1 Without jiggle valve: 88°C x 1
Cooling fan		Suction type or blower type	
Autocool fan coupling <8DC9-TL>	Type	Viscous type	
	Hydraulic fluid	Silicone oil	
V-belt	Type x Number of belts	Without fan drive	Low edge cog C type x 1 or C type x 2
		With fan drive	Low-edge cogged type C x 1 (for water pump) Low-edge cogged type C x 2 (for alternator)
			Low-edge cogged type C x 2 (for water pump) Low-edge cogged type B x 2 (for alternator)

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4.5 BUCKET CIRCUIT

The bucket circuit has the following functions ; bucket single digging,2-pump discharge conflux, attachment boost pressure and bucket conflux cut at compound operation.

4.5.1 BUCKET OPERATING 2-PUMP CONFLUX CIRCUIT (BUCKET DIGGING)

(1) Pilot circuit

1) Operating pilot valve (11)
If bucket digging motion is performed, proportionate secondary pilot pressure PA2 for bucket digging operation is sent out.

2) Control valve (3)
Proportionate secondary pressure PA2 enters the PBC port, changes over the bucket spool and connects the pump circuit with the bucket cylinder circuit. At the same time, the proportionate secondary pressure is admitted to the Pil port of the hydro valve (22).

3) Hydro valve (22)
Proportionate secondary pilot pressure for bucket operation which enters the Pil port changes over the hydraulic valve and connects the primary pressure at the P1 port with the P2 port.

4) Control valve (3)
If the secondary pilot pressure enters the Pigd port, it changes over the neutral cut valve(395A) and at the same time turns the travel priority spool (391) to the travel priority function.

5) The bucket conflux cut function will be mentioned under combined operation of arm discharge / bucket discharge which will be described later.

(2) Main circuit
The oil streams from the No.1 and No.2 pumps are combined in the control valve, enters the bucket cylinder head (H) side and speeds up the bucket operation.

4.5.2 ATTACHMENT BOOST PRESSURE CIRCUIT

(1) Pilot circuit

1) Attachment boost pressure signal
If the attachment boost pressure switch built in the operating grip or heavy lift switch is pressed, it is turned on electrically. Then the A3 spool of the solenoid valve (23) is changed over to connect primary pressure with the A3 port.

2) Control valve (3)
Primary pilot pressure connects with the PL1 and PL2 ports and increases the opening pressure of the main relief valves of the control valve.

(2) Main circuit
The digging power is increased as the main relief pressure rises when extra power is needed.

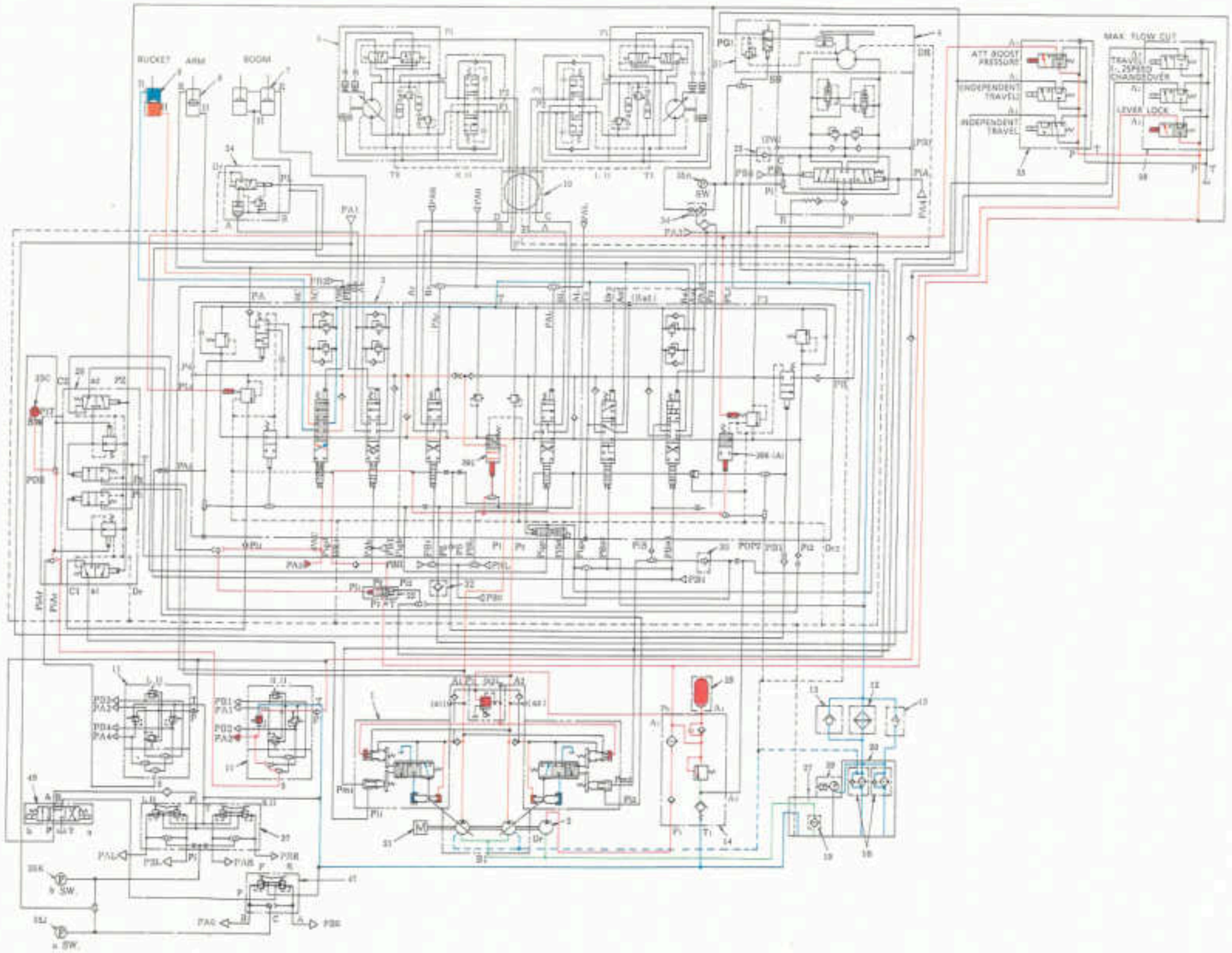


Fig. 8 2-Pump conflux attachment boost pressure circuit for bucket digging operation

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