KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK450(LC)-6

SK480(LC)-6

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2) Operation

1. Hold condition

In the hydraulic circuit diagram (Fig. 5-7), L is held constant by the boost pressure supplied from port M. Ports A and B that are connected with the hydraulic motor are blocked by the anti-cavitation valve and relief valves (600), (601). Therefore, the hydraulic motor is held at its stop position against rotating power by external force.

In the meantime, if external force acts upon the hydraulic motor, pressure is built up at port A or B. The hydraulic motor turns only a little because of internal leakage, with the result that cavitation is about to occur on the low pressure side of the closed circuit. The anti-cavitation valve works so as to prevent the cavitation from occurring; an oil passage M-L-A (B) is formed to replenish an oil volume equal to the amount of leakage to the closed circuit.

2. At startup operation :

The oil delivered by the hydraulic pump is supplied to the hydraulic motor by way of the control valve (VBY-155C), whereupon the hydraulic motor begins to turn. Since the revolution of the hydraulic motor does not increase suddenly because the hydraulic motor has large inertia load, the pressure at port A (B) rises.

On that occasion, relief valve (601) operates, and the surplus oil returns to the hydraulic tank. In this way the revolution of the hydraulic motor rises gradually to full speed, relieving oil.

If the hydraulic motor tries to rotate beyond the delivery rate of the pump by external force or something, the pressure of port A (B) falls. Then the anti-cavitation check valve operates to feed the hydraulic oil by way of M →L→A (B), thereby preventing cavitation from occurring

3. At stop operation

The rotating hydraulic motor tries to keep rotating by inertia. This makes the hydraulic motor perform pumping action. As the result, the pressure of the discharge port rises to set pressure of the relief valve. Then the hydraulic motor is subject to braking torque corresponding to set pressure of the relief valve and is brought to a stop.

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6. TROUBLESHOOTING

Symptom	Probable cause	Remedy	Ref. group
Overheat	Defective V-belt • Incorrect tension	Adjust	
	• Broken belt	Replace	
	Clogged cooling system	Clean	
	Defective thermostat	Replace	
	Defective water pump • Loose shaft to impeller engagement	Replace	
	• Loose shaft to flange engagement	Replace	
	• Improper clearance between impeller and water pump case	Correct	
	• Damaged impeller	Replace	
	Clogged radiator fins	Clean	
	Defective autocool fan coupling • Damaged bimetal	Replace	
	• Clogged bimetal	Clean	
	• Defective autocool fan coupling proper	Replace	
	Damaged cooling fan	Replace	
	Low coolant level	Replenish	
Overcool	Defective thermostat	Replace	
Quick loss of coolant	Defective radiator hose • Loose hose connection	Correct	
	• Worn or damaged hose	Replace	
	Defective radiator • Radiator proper not tight	Correct or replace	
	• Pressure cap not tight	Replace	
	Defective water pump • Defective unit seal	Replace	
	• Defective oil seal	Replace	
	• Pump mounted improperly	Correct	
	Defective oil cooler	Replace	Group 12
	Thermostat case or cover mounted improperly	Correct	
	Defective heater hose • Loose hose connection	Correct	
	• Worn or damaged hose	Replace	
	Defective cylinder head gasket	Replace	Group 11

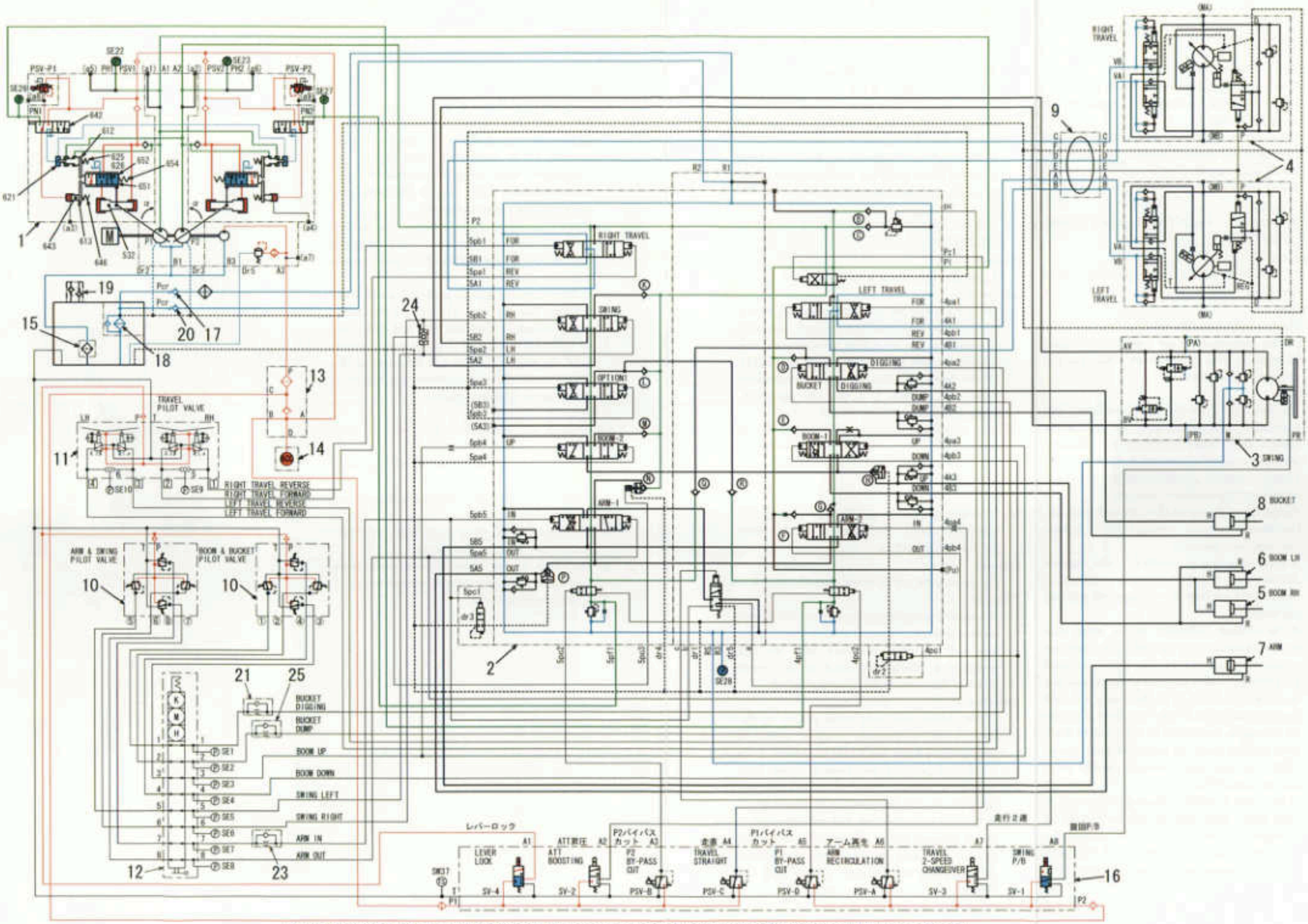
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4.3.2 HYD. LINES PARTS LIST (1/5)

ITEM	PART NAME	Q'TY	REMARKS or PART No.
	REMOTE CONTROL		
(1)	Pump control lines		LS06H00002F1
	(Same as STD.)		(See LS22 page 34)
(2)	Sol. valve control lines.		LS64H00035F1
1	CONNECTOR	2	PF1/4
2	CONNECTOR	1	PF3/8
3	CONNECTOR	1	PF3/8 with filter
4	CONNECTOR	1	PF3/8 L=23
5	CONNECTOR	1	PF1/4 with filter
6	SOL. VALVE ASSY	1	YN35V00022F1
7	HOSE ; PF3/8 L=2400	1	Drain
8	HOSE ; PF3/8 L=2500	1	Pilot prime pressure
9	HOSE ; PF3/8 L=3600	1	Pilot prime pressure
10	HOSE ; PF1/4 L=2300	1	Travel 2-speed select com.
11	HOSE ; PF3/8 L=640	1	Arm in
12	HOSE ; PF1/4 L=1800	1	P1 bypass cut proportional
13	TEE	1	PT3/8-PF3/8
14	ELBOW	9	PF1/4
15	HOSE ; PF1/4 L=1400	1	Travel straight valve select
16	HOSE ; PF1/4 L=3100	1	Pilot prime pressure
17	HOSE ; PF1/4 L=2200	1	P2 bypass cut proportional
18	CAPSCREW	2	M10×20
19	CAPSCREW	3	M10×75
20	CLIP	1	
21	WASHER	9	M10
22	CLIP	7	
23	ELBOW	3	PF3/8
24	THERMO SWITCH	1	2479R2348
25	HOSE ; PF1/4 L=1700	1	ATT. boost pressure select
26	CLIP	1	
27	CLIP	1	
28	CAPSCREW	3	M12×30
29	WASHER	3	
30	ELBOW	1	PF3/8
31	ELBOW	1	PF3/8
32	TUBE	4	
33	GROMET	2	
34	CLIP	1	
35	HOSE ; PF1/4 L=1900	2	Arm variable recirculation cut Swing P/B release com.
36	RUBBER	1	L=395
37	CLIP	1	
38	SOLENOID VALVE	1	2436U3045F2
39	SOLENOID VALVE	1	LE35V00001F2
40	BRACKET	1	
41	ELBOW	2	PF3/8-PF1/4
42	ELBOW	3	PF3/8
43	TEE	1	PF3/8
44	TEE	1	PF1/4-PF3/8
45	CAPSCREW	4	M10×25
46	CAPSCREW	2	M6×18
47	CAPSCREW	2	M6×25
48	WASHER	4	M6
49	LOCK WASHER	2	M6
50	NUT	2	M6
51	HOSE ; PF1/4 L=220	1	Bucket cut S/V drain
52	HOSE ; PF3/8 L=700	1	Bucket digging
53	HOSE ; PF3/8 L=680	1	Arm out
54	CLIP	1	
55	BRACKET	1	
(3)	P-T block control		YN64H00141F3
2	CAPSCREW	2	M8×40
3	WASHER	2	M8
4	TEE	1	PF1/4
5	TEE	1	PF3/8
6	CONNECTOR	2	PF3/8
7	CONNECTOR	3	PF1/4
9	ELBOW	1	PF3/8
10	ELBOW	2	PF1/4-PF3/8
11	BLOCK	1	
(4)	ATT. Remote control		LS68H00027F1
1	CAPSCREW	8	M6×25
2	WASHER	8	M6
3	PILOT VALVE	2	YT30V00008F2
4	BOOT	6	
5	CLIP	1	
6	HOSE ; PF1/4 L=1100	1	Pilot prime. pressure
7	HOSE ; PF3/8 L=3200	1	Drain
8	HOSE ; PF3/8 L=1050	1	Drain
9	HOSE ; PF1/4 L=1050	3	Pilot prime. pressure
10	CLAMP	3	
11	CAPSCREW	2	M8×40
12	HOSE	2	L=650
13	CAPSCREW	2	M8×65
14	WASHER	4	M8
15	CONNECTOR	11	PF3/8
16	CONNECTOR	2	PF1/4 with filter
17	HOSE ; PF3/8 L=1150	1	Drain
18	HOSE ; PF3/8 L=2500	1	RED Swing (R)
19	HOSE ; PF3/8 L=2250	1	GREEN Arm out
20	HOSE ; PF3/8 L=2050	1	BLUE Arm in
21	HOSE ; PF3/8 L=2450	1	GRAY Swing (L)
22	HOSE ; PF3/8 L=2450	1	GREEN Boom up
23	HOSE ; PF3/8 L=2950	1	RED Bucket digging
24	HOSE ; PF3/8 L=2550	1	GRAY Boom down
25	HOSE ; PF3/8 L=2500	1	BLUE Bucket dump
(5)	T. block control		LS64H00018F2
1	BLOCK	1	
2	PRESSURE SENSOR	8	YX52S00010P1
3	CONNECTOR	12	PF3/8
4	CAPSCREW	2	M8×65
5	WASHER	6	M8
6	CAPSCREW	4	M8×40
7	CLAMP	4	
8	CAPSCREW	1	M8×55
9	WASHER	3	M8
10	SUPPORT	1	
11	CAPSCREW	2	M12×20
12	WASHER	2	M12
13	HOSE ; PF3/8 L=1400	1	Bucket digging
14	HOSE ; PF3/8 L=1800	1	Boom down
15	HOSE ; PF3/8 L=1900	1	Swing (R)
16	HOSE ; PF3/8 L=1300	1	Boom up
17	HOSE ; PF3/8 L=1600	1	Swing (L)
18	HOSE ; PF3/8 L=1750	1	Bucket dump
19	HOSE ; PF3/8 L=2100	1	Arm out
20	TEE	2	PF3/8
21	ELBOW	3	PF1/4
22	ELBOW	2	PF3/8
23	ELBOW	2	PF1/4-PF3/8
24	SHUTTLE VALVE	1	YN26V00001F2
25	HOSE ; PF1/4 L=450	1	Swing priority com.
26	HOSE ; PF1/4 L=500	1	Swing priority com.
27	HOSE ; PF1/4 L=1650	1	Swing priority lock valve back press.
28	HOSE ; PF3/8 L=1700	1	Arm in
29	CAPSCREW	2	M8×85
30	BLOCK	2	
31	ELBOW	1	Pf3/8
32	CHECK VALVE	1	YN21V00005F2
(6)	Main C/V control		LS06H00017F1
1	CONNECTOR	7	PF1/4
2	CONNECTOR	7	PF1/4-PF3/8
3	CONNECTOR	8	PF3/8
4	CONNECTOR	1	PF1/4 L=23
5	CONNECTOR	1	PF1/4-PF3/8 L=23
6	CONNECTOR	1	PF1/4 L=38
7	ELBOW	10	PF1/4
8	ELBOW	8	PF1/4-PF3/8
9	ELBOW	8	PF3/8
10	HOSE ; PF1/4 L=350	2	Arm 2 speed secondary press.
11	WASHER	1	M10
12	TEE	3	PF1/4
13	TEE	10	PF3/8
14	ELBOW	2	PF1/4-PF3/8
15	CONNECTOR	1	
17	TEE	1	PF3/8
18	PRESSURE SENSOR	1	PF1/4
19	HOSE ; PF1/4 L=400	2	
20	HOSE ; PF1/4 L=460	1	
21	HOSE ; PF1/4 L=700	2	
22	HOSE ; PF1/4 L=750	1	
23	CONNECTOR	1	PF3/8 ∅0.9 Throttling
24	CONNECTOR	1	PF3/8 ∅1.2 Throttling
25	HOSE ; PF1/4 L=420	2	Drain
26	HOSE ; PF3/8 L=600	1	Drain
27	HOSE ; PF3/8 L=500	1	Drain
28	HOSE ; PF3/8 L=800	1	Drain
29	HOSE ; PF1/4 L=400	1	Drain
30	CAPSCREW	1	M10×25
31	CHECK VALVE	1	YN21V00005FB

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NEUTRAL CIRCUIT : NEGA-CON function at safety lock lever ON (Down : Unlock posion)

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