KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK450(LC)-6

SK480LC-6(S)

S5LS0110E

APPLICABLE:
LS09-01501~
YS09-01301~

Issued: November, 2004

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SPECIFICATION

TABLE OF CONTENTS

1. NAME OF COMPONENTS 1
2. GENERAL DIMENSIONS 2
3. WEIGHT OF COMPONENTS 3
4. TRANSPORTATION 4
5. SPECIFICATIONS AND PERFORMANCE 6
6. TYPE OF CRAWLER 7
7. TYPE OF BUCKET 8
8. COMBINATIONS OF ATTACHMENT 8
9. ENGINE SPECIFICATIONS 9

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LS03

ATTACHMENT DIMENSION

TABLE OF CONTENTS

1. BOOM
   1.1 Boom dimensional drawing 1
   1.2 Boom maintenance standard 2
2. ARM
   2.1 Arm dimensional drawing 4
   2.2 Arm maintenance standard 5
3. BUCKET
   3.1 Bucket dimensional drawing 7
   3.2 Bucket dimensional table 7
   3.3 Dimensional drawing of lug section 8
   3.4 Dimensional drawing of boss section 9

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LS11

TOOLS

TABLE OF CONTENTS

1. TIGHTENING TORQUES FOR CAPSCREWS AND NUTS 1
2. SCREW SIZE AND TOOLS NOMINAL SIZE 2
3. TIGHTENING TORQUES FOR NUTS AND SLEEVES 3
4. PLUG 4
5. SPECIAL SPANNER FOR TUBE 7
6. SPECIAL TOOLS 8
7. APPLICATION OF SCREW LOCKING COMPOUND AND SEALING COMPOUND 10
8. SUCTION STOPPER 11
9. UPPER FRAME LIFTING JIG 12
10. ENGINE MOUNTING PEDESTAL 13

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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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5.6 TROUBLESHOOTING

5.6.1 SWING MOTOR

(1) General precautions

Given below are actions to be taken when you have found any abnormality on the hydraulic motor during operation:

1) Think about this before proceeding to work.
Before proceeding to work, determine the nature of the fault and think if the same symptom that occurred before. Think once again if the fault really results from the motor.

2) Beware of dust.
Many faults result from dust. Therefore take adequate measures at disassembly to prevent entry of dust.

3) Handling parts
Parts are precision finished and sufficient care should be taken in handling so as not to damage parts.
It is recommended during disassembly to replace O rings with new ones.

4) Inspecting the oil in casing
Remove the drain plug and inspect the hydraulic oil in the casing. If a large amount of metallic particles come out with oil, you should suspect of a failure of motor interior parts.

5) Presence of abnormal noise
Check whether the motor emits an abnormal noise or not.

6) Pressure measurement of various points
Measure pressures at various points and check for faults, in stead of disassembling parts at random.

(2) Troubleshooting

1) Hydraulic motor does not rotate.

Trouble	Cause	Remedy
Pressure does not rise.	1. Safety valve in circuit is not set correctly.	1. Set to correct value.
Pressure rises.	1. Overload	1. Eliminate overload.
	2. Moving parts are seized.	2. Inspect and repair piston, shoe, cylinder block and valve plate.
	3. Brake release pressure is not working on the motor	3. Check circuit and correct it.
	4 Brake piston is stuck.	4. Disassemble and check.
	5. Friction plate and separator are seized.	5. Disassemble, check and repair.

2) Rotating direction is opposite.

Trouble	Cause	Remedy
Rotating direction is opposite.	1. Motor's rotating direction is reversed.	1. Assemble correctly.
	2. Piping inlets and outlets are reversed.	2. Pipe correctly.

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2. MAJOR SPECIFICATIONS

2.1 Major Specifications

Item \ Engine model	6D24	6D24-T	6D24-TC	6D24-TL
Type	Diesel, 4-cycle, water-cooled			
Combustion method	Direct injection			
No. and arrangement of cylinder	6, in-line			
Cylinder bore x stroke mm	130 x 150			
Total displacement cm^3	11945			
Engine dimension (with fan)				
Overall length mm	1473	1473	1473	1473
Overall width mm	866	881	881	869
Overall height mm	1058	1169	1209	1246
Empty weight kg*	905	930	960	940

* Empty weight as measured according to Mitsubishi Motors Corporation standard.

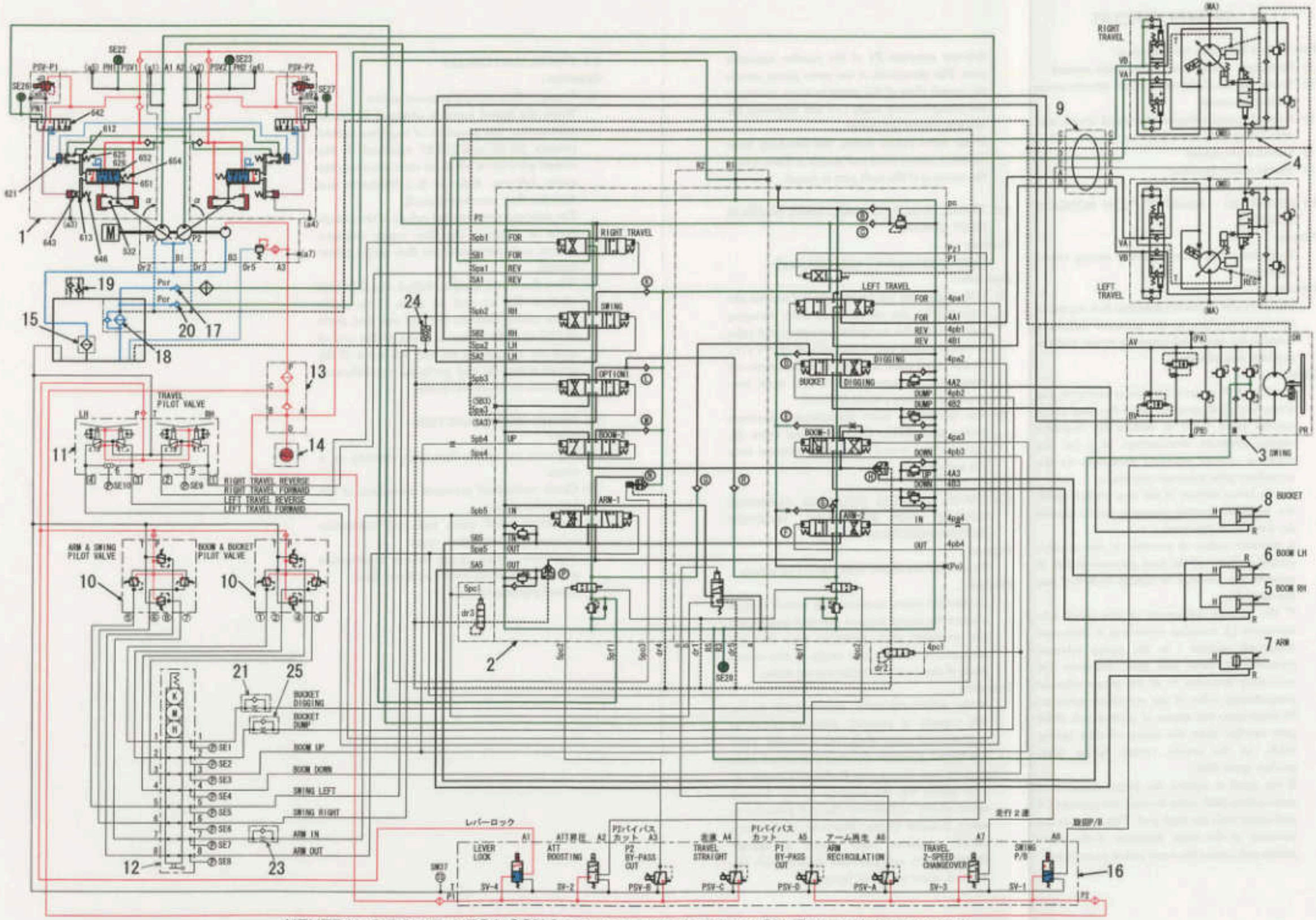
2.2 Engine Outputs Classified by Application

Application \ Engine speed rpm \ Engine model		6D24	6D24-T Turbocharged	6D24-TC Turbocharged with Aftercooler
Intermittent rated output kW (PS)	1500	114 (115)	163 (222)	182 (247)
	1800	136 (185)	191 (260)	207 (282)
	2000	144 (196)	201 (273)	217 (295)
	2200	151 (205)	206 (280)	228 (310)
Continuous rated output kW (PS)	1500	104 (141)	148 (202)	165 (224)
	1800	124 (168)	174 (236)	188 (256)
	2000	131 (178)	182 (248)	197 (268)
	2200	137 (186)	187 (255)	207 (282)

NOTE:

1. **The output (SAE, gross) is corrected to standard ambient conditions based on SAE J1349.**
2. **The continuous rated output allows 10% (one hour) overload operation.**

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

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