KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK100

S5YW0102E

APPLICABLE:
YW-02801~

Issued: November, 1990

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YW01

SPECIFICATION

TABLE OF CONTENTS

1. LOCATION OF COMPONENTS 1
2. GENERAL DIMENSIONS 2
3. SPECIFICATIONS AND PERFORMANCE 4
4. TYPE OF SHOES 5
5. TYPE AND COMBINATION OF ATTACHMENTS 6
6. WORKING RANGES OF ATTACHMENTS 9
7. LIFTING-UP ABILITY DIAGRAM 12
8. ENGINE SPECIFICATIONS 14

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MAINTENANCE STANDARDS AND TEST PROCEDURES

TABLE OF CONTENTS

YW04

1. GENERAL 1
2. MEASUREMENT AND ADJUSTMENT
   - 2.1 Equipment to be Prepared 2
   - 2.2 Standard Measuring Condition 2
   - 2.3 Reading the Engine Revolution 2
   - 2.4 Adjusting the Engine Revolution by Mechatro Controller 3
   - 2.5 Setting the Engine Stop and High Positions 3
   - 2.6 Setting the Engine Revolution 6
   - 2.7 Procedure for Adjusting the Variable Loading Mode ... 6
   - 2.8 Pressure Measuring Positions 6
   - 2.9 Measuring and Adjusting the Circuit Pressure 7
   - 2.10 Performance Inspection Standard 9
   - 2.11 Procedure for Adjusting the Pressure of Independent Relief Valves 11
   - 2.12 Procedure for Measurement and Adjustment of Negative Control Relief Pressure 12
   - 2.13 Measuring the Pressure of Pump (P2) in Loading Mode 13
   - 2.14 Measuring the secondary pressure of KPSS Solenoid Proportionate Valve 13
3. CYLINDER SPEED 14
4. CYLINDER OIL TIGHTNESS 15
5. SWING PERFORMANCE 16
6. TRAVEL PERFORMANCE 17
7. OIL DRAIN FROM MOTORS 18
8. PLAY OF SWING BEARING 19

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TROUBLESHOOTING

TABLE OF CONTENTS

1. INTRODUCTION
   1.1 Machine in general 1
2. DRIVE SYSTEM 1
3. HYDRAULIC SYSTEM 2
4. SWING SYSTEM 3
5. TRAVEL SYSTEM 7
6. ATTACHMENT SYSTEM 11
7. CONTROL SYSTEM 15
8. ELECTRICAL SYSTEM 17

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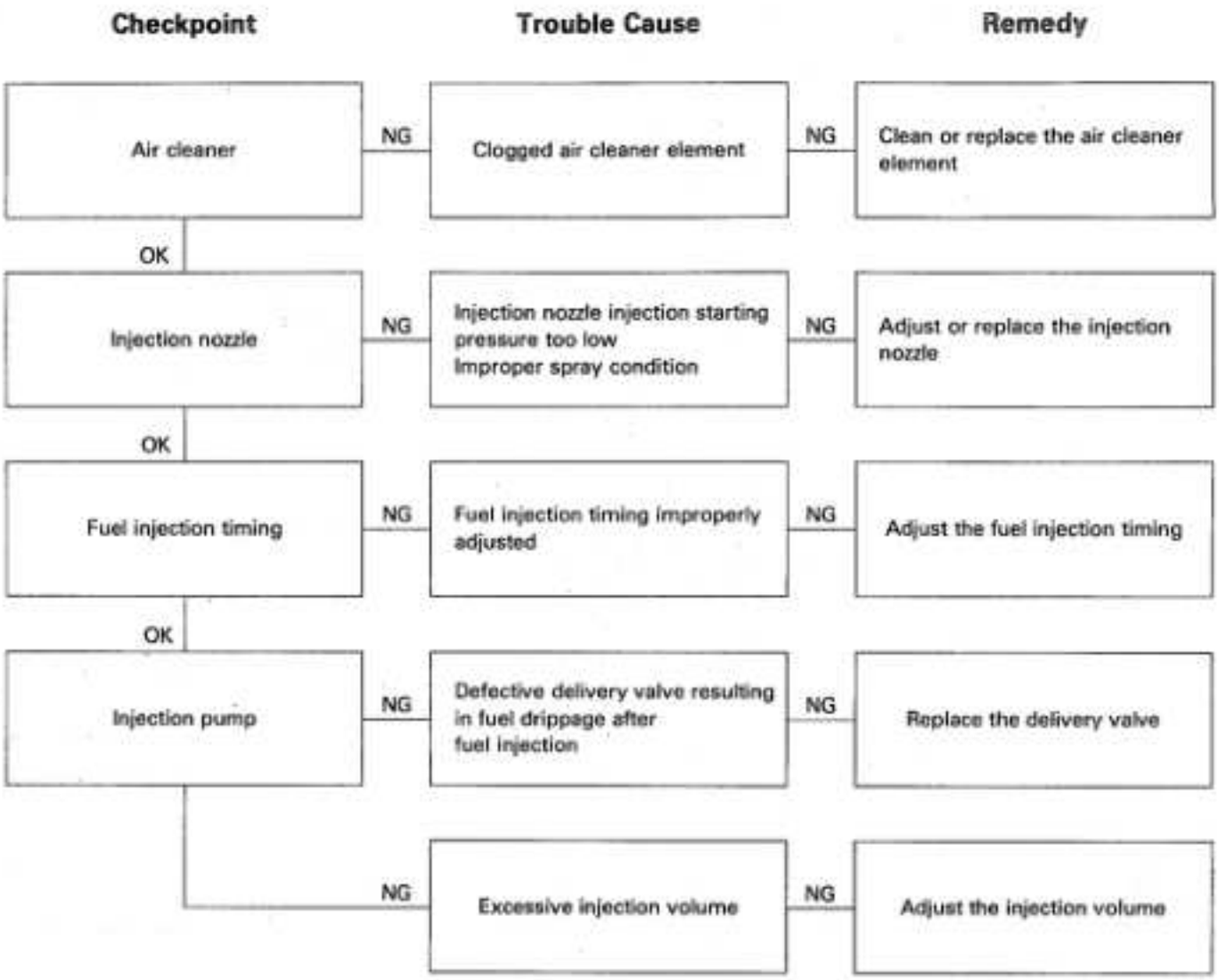
MAIN DATA AND SPECIFICATIONS

Item \ Engine Model		6BB1	6BD1	6BD1T
Engine type		Water cooled, four cycle, vertical in-line, overhead valve		
Combustion chamber type		Direct injection		
Cylinder liner type		Dry		
No. of cylinders — bore × stroke	mm(in)	6–102.0×110.0 (4.02×4.33)	6 — 102.0 × 118.0 (4.02 × 4.65)	
Total piston displacement	$cm^3(in^3)$	5,394 (329)	5,785 (353)	
Compression ratio (To 1)		17.5		
*Engine dimensions Length × width × height	mm(in)	1122×648×775 (44.1×25.5×30.5)	1122×648×775 (44.1×25.5×30.5)	1132×680×883 (44.6×26.8×34.8)
*Engine weight (Dry)	kg(lb)	450 (992)	450 (992)	497 (1096)
Fuel injection order		1 — 5 — 3 — 6 — 2 — 4		
Specified fuel		Diesel fuel (ASTM D975 No. 2D)		
Injection pump		In-line plunger, Bosch A type		
Governor		Mechanical, RSV type		
Injection nozzle		Multi hole		
*Injection starting pressure	$kg/cm^2(psi)$	150 (2,133), or 185 (2,630)		185 (2,630)
Fuel filter type		Center bolt or cartridge (spin-on)		
Water sedimentor	(if so equipped)	Sediment/water level indicating type		
Compression pressure (At warm)	$kg/cm^2(psi)$	31 (441) at 200 rpm at sea level		
Valve clearances (At cold) Intake	mm(in)	0.40 (0.016)		
Exhaust	mm(in)	0.40 (0.016)		
Lubrication method		Pressurized circulation		
Oil pump		Gear type		
Main oil filter type		Center bolt, full flow or cartridge (spin-on)		
*Lubricating oil capacity	lit(US/UK gal)	13 (3.44/2.86)		
Oil cooler		Water cooled integral type		
Cooling method		Pressurized forced circulation		
Coolant capacity (engine only)	lit(US/UK gal)	12.0 (3.2/2.6)		
Water pump		Belt driven impeller type		
Thermostat type		Wax pellet type		
*Alternator	V-A	24 — 25		
*Starter	V-KW	24 — 4.5		
*Turbocharger manufacturer		—	—	IHI
*Turbocharger model		—	—	RHB7 or RHC7

Note: 1. These specifications are based on the standard engine.
2. Specifications for items marked with an asterisk (*) will vary according to the type of equipment on which the engnine is installed.
If you are unable to locate the data applicable to these specifications, please contact Isuzu Motors LTD through your machine supplier.

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DARK EXHAUST SMOKE



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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-002801~				

Revision	Date of Issue	Remarks
First edition	November, 1990	S5130736E K

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4.5.3 BOOM LOWERING CIRCUIT

The boom lowering circuit performs the following three functions:

- Preventing the attachment from dropping suddenly in the case of a broken hydraulic circuit through the use of a holding valve.
- Providing fine-tuned boom lowering motion through the use of two-step speed changeover.
- Providing positive bucket motion during simultaneous boom lowering and bucket operations through the use of a fixed recirculation circuit.

(1) Pilot circuit

1) Switching the boom spool
When the boom is lowered, secondary pressure from port PB1 of the pilot valve (11) enters port PBb of the control valve to switch the arm spool.

2) Switching the holding valve
When the boom is lowered, secondary pressure from the same port PB1 is sent to port PL of the holding valve to switch the valve. Consequently, the oil returning from the boom cylinder pushes the check valve up.

3) Boom lowering speed 2-step changeover
When the work mode is switched to FC, pressurized oil from port A3 of the solenoid valve (28) enters port PAbS of the control valve, and boom lowering speed 2-step changeover occurs to slow down the boom lowering speed.

4) Reducing the maximum discharge of the pump
When the mode is switched to FC as mentioned above, the pump's solenoid proportionall reducing valve is also switched over, and the pri-mary pressure enters port P1 of the solenoid valve from accumulator (29), and the proportional secondary pressure reduces the horsepower of both pumps to regulate the maximum discharge.

(2) Main circuit

Boom lowering fixed recirculation circuit
When the boom spool is switched to the down position, the oil returning from the head side (H) of the cylinder is throttled by the restrictor (C) in the valve before returning to the tank. This throttling and the drop of the attachment under its own weight increases the circuit pressure and forces the check valve (D) open. The retuning oil is thus recirculated for supply to the rod side (R) of the cylinder.
During simultaneous boom lowering and movement of the bucket, the fixed recirculation circuit provides positive bucket motion because it reduces the oil supply for boom lowering com-pared to when no such circuit is provided.

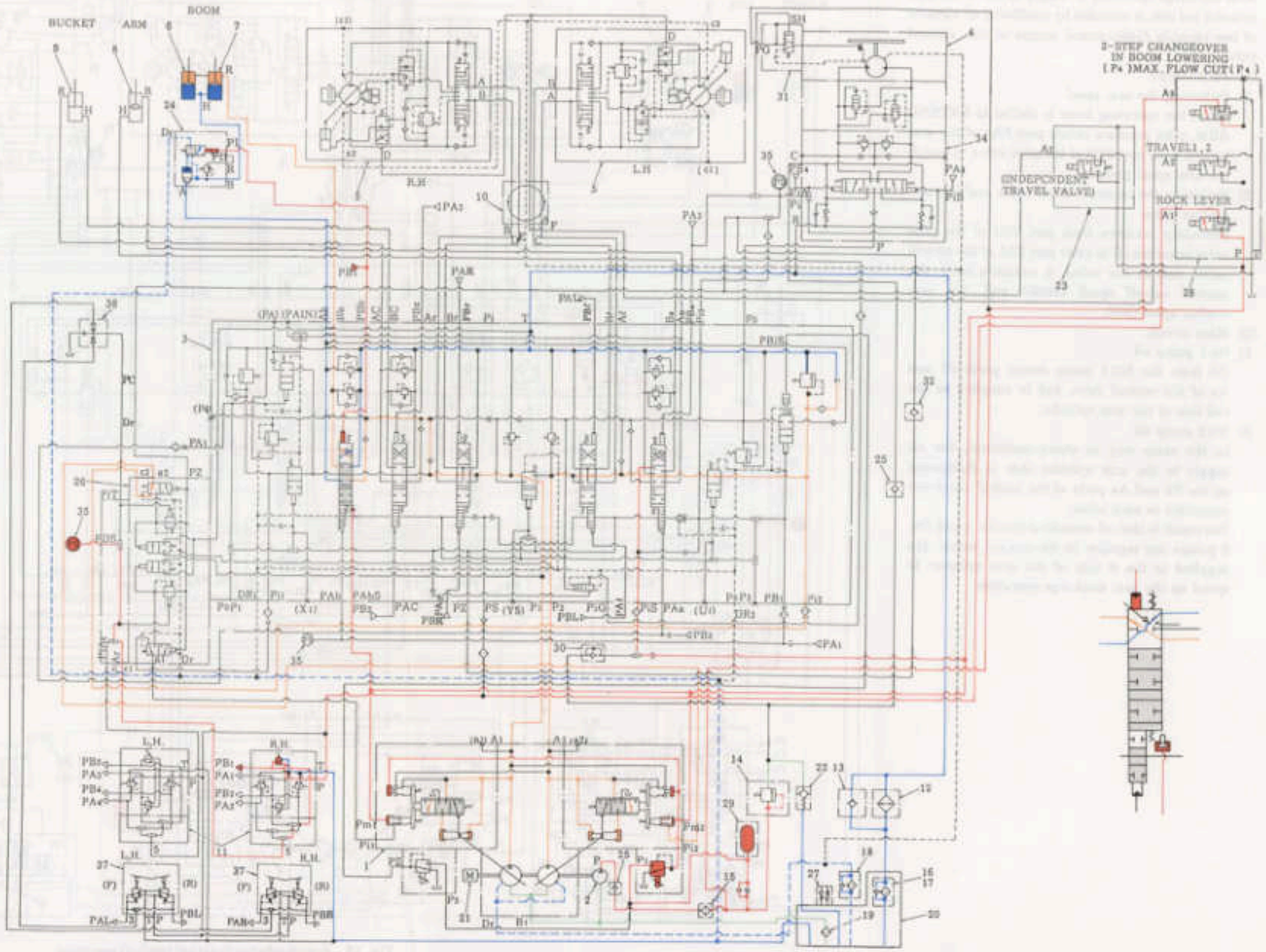


Fig. 17 Lowering the Boom (in FC mode)

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