SERVICE MANUAL

EXCAVATOR

JS200, JS210, JS220, JS235

EN - 9813/7300 - ISSUE 2 - 11/2017

This manual contains original instructions, verified by the manufacturer (or their authorized representative).

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Foreword

The Operator's Manual

⚠

You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

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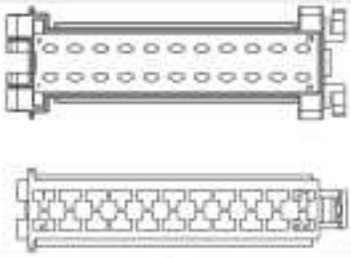
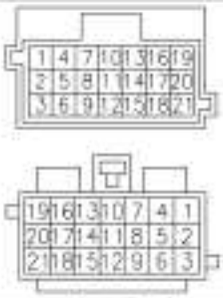
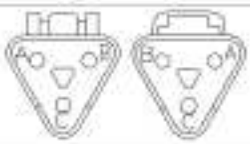
Technical Data

Table 62. Crankcase and Bedplate Data

	4.4L	4.8L
Cylinder bore[1]	103–103.02mm	106–106.02mm
Main bearing bolts torque[2]		
First stage	50N·m	50N·m
Second stage	115N·m	115N·m
Final stage	Turn a further 180°	Turn a further 180°
Surface finish for cylinder head joint[3]	Rz < 15m, Rmax < 20	Rz < 15m, Rmax < 20
Diameter of first oversize bore	103.5–103.52mm	106.5–106.52mm
Diameter of second oversize bore	104–104.02mm	
Main bearing bore (without bearings)		
Numbers 1 to 4	92–92.02mm	92–92.02mm
Number 5	105–105.02mm	105–105.02mm
Main bearing bore (with bearings)		
Numbers 1 to 4	88.047–88.09mm	88.047–88.09mm
Number 5	100.047–100.09mm	100.047–100.09mm
Camshaft bore		
Numbers 1 to 4	60.04–60.07mm	60.04–60.07mm
Number 5 (bush)	60.29–60.32mm	60.29–60.32mm
Permissible wave profile	wt < 10m (2.5 distance)	wt < 10m (2.5 distance)

(1) Nominal diameter to be measured 63mm below the cylinder head face.
(2) Torque information MUST be used in conjunction with the recommended procedures contained in this manual. Failure to use the appropriate and correct removal, replacement, dismantle and assembly procedures may result in an engine failure in service. Refer also to the procedures for the correct bolt tightening sequence.
(3) The crankcase to cylinder head surface may be skimmed and restored using the oversize gaskets (0.25mm and 0.5mm).

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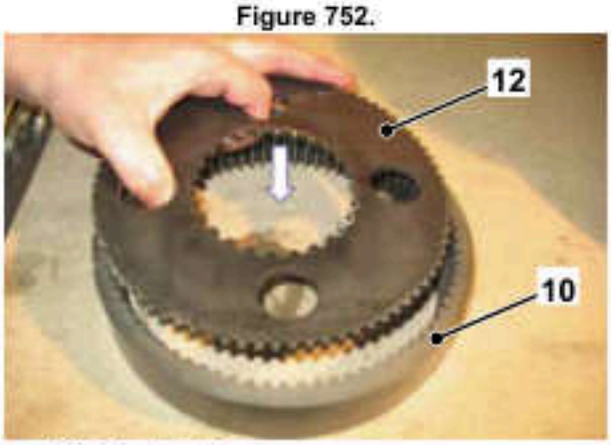
	Connector Pins	Details
Harness inter-connectors IC10		In-line connectors.
Harness inter-connectors IC07		In-line connectors.
Harness inter-connectors IC08		In - line connectors.
Harness inter-connectors IC04		In-line connectors.
Harness inter-connectors IC22, IC03		In-line connectors.

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Fault Code	Machine Reaction	Fault Description
P042D		Exhaust Temperature Sensor 2 High Voltage Fault
P046D		Exhaust Gas Recirculation Sensor "A" Circuit Intermittent/Erratic
P0470	Torque Reduction	Exhaust manifold pressure sensor fault
P0472	Torque Reduction	Exhaust manifold pressure sensor fault
P0473	Torque Reduction	Exhaust manifold pressure sensor fault
P0512		Starter Switch Fault
P0520		Low oil pressure Lamp/Gauge drive circuit fault
P0521		Oil pressure sensor signal fault
P0522	None	Engine Oil Pressure Sensor Fault (Low Voltage Fault)
P0522	Torque Reduction	Oil Pressure Signal Out of Range High
P0523	Torque Reduction	Low Oil Pressure During Engine Running
P0544	Torque Reduction	Exhaust gas temperature sensor fault
P0545	Torque Reduction	Exhaust gas temperature sensor circuit low
P0546	Torque Reduction	Exhaust gas temperature sensor circuit high
P0560		12 Power Supply Voltage Fault
P0562	Torque Reduction	System Power Supply Low Voltage Fault
P0563	Torque Reduction	System Power Supply High Voltage Fault
P0603	Engine Stop	ECU memory integrity fault
P0604	Engine Stop	ECU memory integrity fault (RAM error)
P0605	Engine Stop	ECU memory integrity fault (code integrity)
P0606	Engine Stop	Functional Safety Fault
P060A	Engine Stop	Functional Safety Fault
P060B	Limp Home (Idle Only)_Engine Stop	A/D Conversion Fault
P060C	T4F Inducement	After treatment monitoring error
P0612		Fuel Injector Control Module Relay Control
P0615		Starter Relay Circuit
P0627	Torque Reduction	Lift pump fault
P0628	Torque Reduction	Lift pump fault
P0629	Torque Reduction	Lift pump fault
P062B	Torque Reduction	Functional Safety Fault
P062D	Delayed Engine Stop	Injector Bank 0 fault shorted to ground
P062D	Delayed Engine Stop	Injector Bank 0 fault shorted to ground
P062E	Delayed Engine Stop	Injector Bank 1 fault shorted to ground
P062E	Delayed Engine Stop	Injector Bank 1 fault shorted to ground
P062F	Torque Reduction_Limp Home (Idle Only)	ECU non volatile memory fault
P0630		VIN Not Programmed or Incompatible - ECM/PCM
P0638		Intake Throttle Fault
P0641	Torque Reduction_Limp Home (Idle Only)_Delayed Engine Stop	ECU Internal 5V Supply 1 fault
P0650		Check Engine Lamp Fault
P0651	Torque Reduction_Limp Home (Idle Only)_Delayed Engine Stop	ECU Internal 5V Supply 2 fault
P0658		DEF (Diesel Exhaust Fluid) heater circuit fault. Short circuit to ground of actuator relay 1
P0659		DEF heater circuit fault. Short circuit to battery of actuator relay 1

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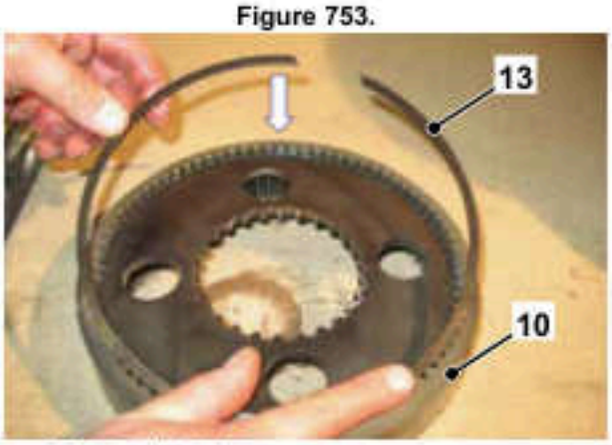
Figure 752.



10 Toothed ring
12 Discs

30. Insert the circlip into its seat in the toothed ring.

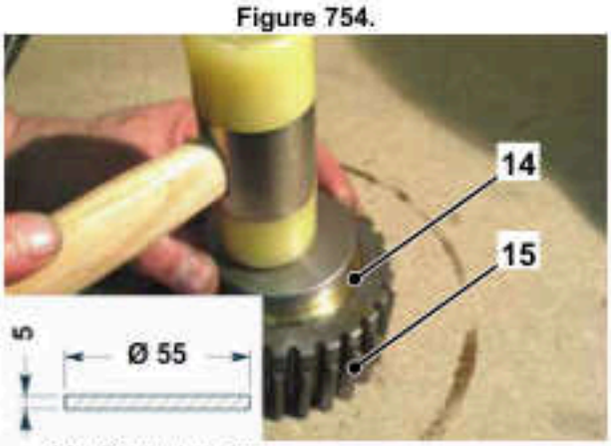
Figure 753.



10 Toothed ring
13 Circlip

31. By using a rubber hammer and a spacer assemble the centering ring into its seat in the sun gear.

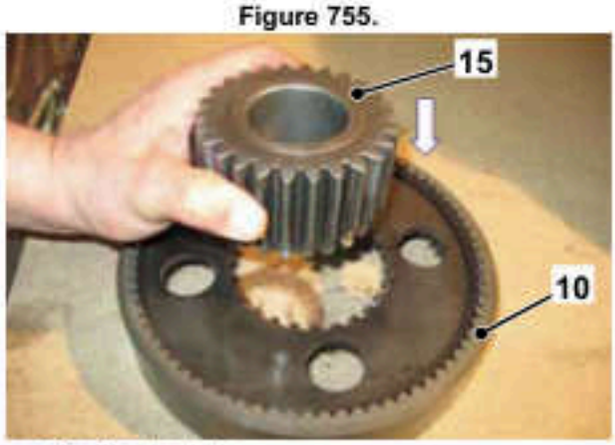
Figure 754.



14 Centering ring
15 Sun gear

32. Insert the 2nd reduction sun gear into the toothed ring.

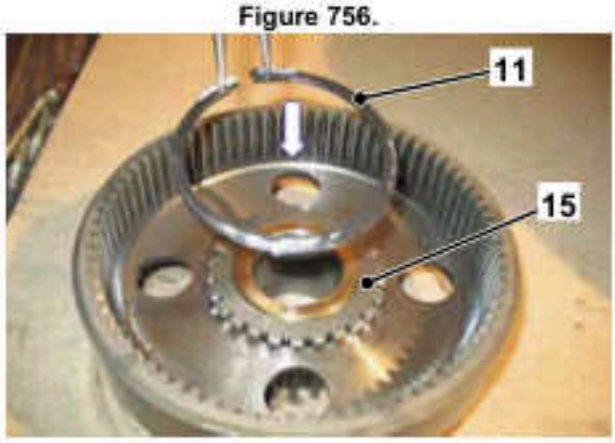
Figure 755.



10 Toothed ring
15 Sun gear

33. By using circlip pliers, assemble the circlip into its seat in the 2nd reduction sun gear.

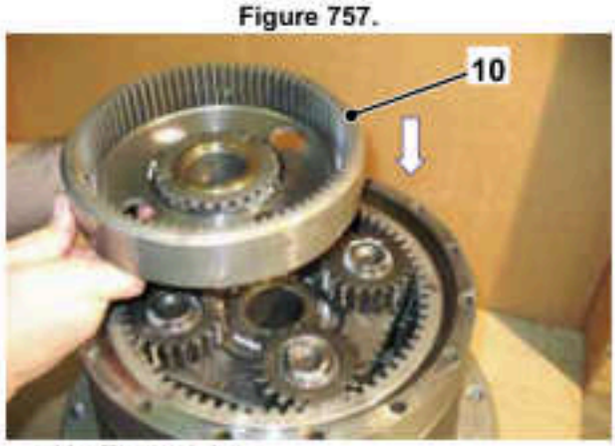
Figure 756.



11 Circlip
15 Sun gear

34. Insert the toothed ring assembly.

Figure 757.



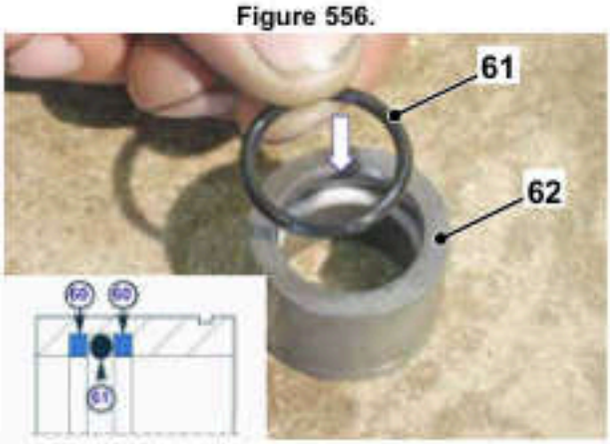
10 Toothed ring

35. Insert the 1st reduction sun gear.

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3. Assemble the O-ring seal into its seat in the free piston. Install the second back-up ring as shown on the sketch.

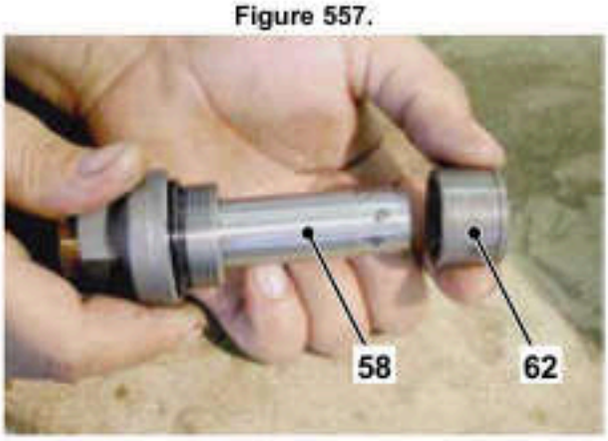
Figure 556.



60 Back-up rings
61 O-ring
62 Free piston

4. Insert the free piston in the relief valve checking that the groove side is turned toward the inside of the motor.

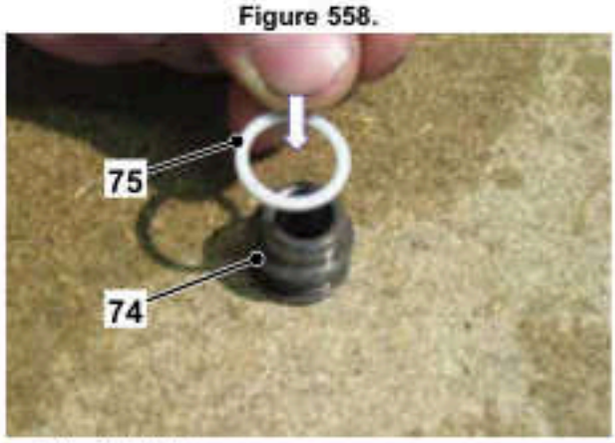
Figure 557.



58 Relief valve
62 Free piston

5. Assemble the first back-up ring into its seat in the poppet.

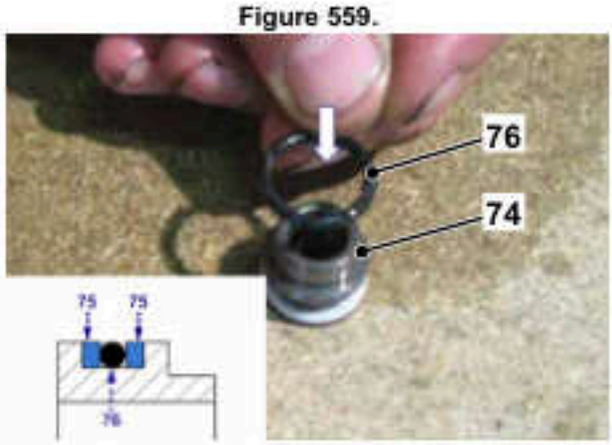
Figure 558.



74 Poppet
75 Back-up rings

6. Assemble the O-ring seal and the second back-up ring into its seat in the poppet.

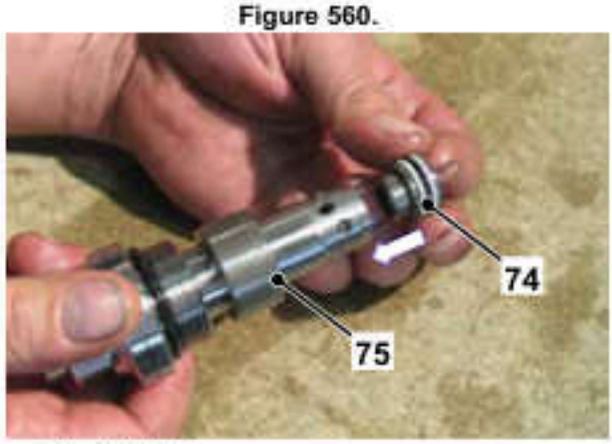
Figure 559.



74 Poppet
75 Back-up rings
76 O-ring

7. Insert the poppet into its seat in the relief valve.

Figure 560.



74 Poppet
75 Back-up rings

8. Insert the first relief valve inside the base plate.

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