SERVICE MANUAL

COMPACT EXCAVATOR
48Z-1, 51R-1

EN - 9813/6200 - ISSUE 1 - 03/2016

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

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Foreword

The Operator's Manual

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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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06 - Front Oil Seal

Remove and Install

Special Tools

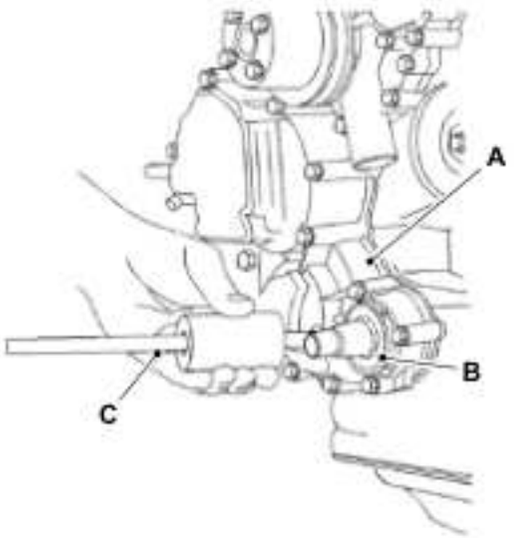
Description	Part No.	Qty.
Slide Hammer Kit	993/68100	1

Remove

1. Make the machine safe. Refer to (PIL 01-03).
2. Remove the crankshaft pulley. Refer to (PIL 15-12).
3. Do not damage the crankshaft during the removal process of the crankshaft front oil seal.
4. Drill the front oil seal with a specified sized drill bit.

   Dimension: 4mm

Figure 91.



A Front case
B Front oil seal
C Slide hammer

4.1. Make sure that the main lip is used to remove the front oil seal.

4.2. Do not damage the edge of the housing for the front oil seal.

5. Remove the front oil seal with a slide hammer.

   Special Tool: Slide Hammer Kit (Qty.: 1)

6. Alternate the position of the slide hammer puller from one hole to another hole. This will allow you to evenly remove the front oil seal from the front case.

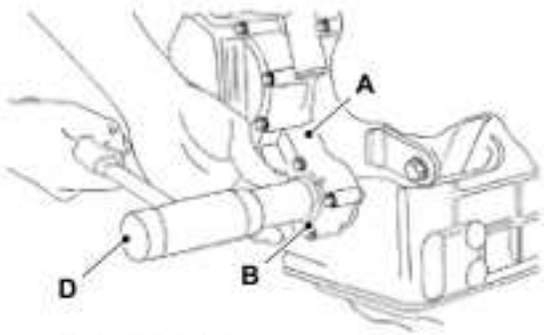
Alternative Removal Procedure

1. Remove the crankshaft pulley. Refer to (PIL 15-12).
2. Remove the timing gear front case. Refer to (PIL 15-51).
3. Press the front oil seal with a suitable mandrel and remove it from the front case.
4. Support the front case to prevent damage to the front case.

Install

1. Make sure that the bore in the front case and the nose of the crankshaft are clean and free from damage.
2. Lubricate the lip of the new crankshaft front seal with clean engine oil.
3. Position the front oil seal in the bore of the front case.
4. Make sure that the lip of the front oil seal that is spring loaded is facing toward the inside of the front case and that it is square with the bore of the case for the front oil seal.
5. Install the front oil seal to the front case.

Figure 92.



A Front case
B Front oil seal
D Soft hammer

6. If necessary, hit the front oil seal with a soft hammer.
7. If removed, install the timing gear front case. Refer to (PIL 15-51).
8. Install the crankshaft pulley. Refer to (PIL 15-12).

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Technical Data

Table 132. Auxiliary Circuit

Low flow	40L/min
High flow at 2000 RPM (Revolutions Per Minute)	90L/min

Table 133. Control Valve

Type	Nine, ten or eleven spool depending on machine options

Table 134. Relief Valve Settings

MRV (Main Relief Valve)	240bar (3,478.2psi)
Boom/Dipper/Bucket/Dozer/Swing	270bar (3,913.0psi)
Aux	190bar (2,753.6psi)

Table 135. Hydraulic Cylinders

Type	Double acting with screwed end caps and hardened steel bearing bushes. All rams are fully end damped.

Table 136. Filtration

Main return line	
Suction filter	125 micron
Return filter	10 micron

Table 137. Controls

Excavator	All servo lever operated to ISO control pattern
Tracks	Individually servo operated by foot pedal or hand lever
Speed selection	Electronically operated via a button on the dozer lever
Auxiliary	Electro Hydraulic servo operated via a button or rocker on the joystick
Swing	Electro hydraulic operated via a button on the joystick
Control isolation	Full control isolation (excluding warm up procedure). Dual isolation via pod position and switch in side panel
Engine speed	Electronically controlled via rotary knob
Engine stop	Ignition key operated
Dozer	Electro hydraulic servo operated via a hand lever

Table 138. Service Capacities

	48Z-1, 51R-1
Hydraulic System	100L
Hydraulic Tank	55L

Table 139. Slew Motor

Relief Valve	
Cracking Pressure	172bar (2,492.7psi) at 1L/min
Speed Control Pressure	216bar (3,130.4psi) at 39L/min
Displacement	18.1 cm3 per revolutions
Gear Ratio	1:21.5
Parking Brake Release Pressure	25bar (362.3psi)

Table 140. Excavator End

Mono boom
Cast tipping link
Boom up end damped, dipper damped both directions
Swing end damped both directions

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50 - Schematic Circuit

Introduction 33-5
Diagram 33-8

Introduction

A schematic wiring diagram is a simplified pictorial representation of the machines electrical circuit. It shows the components of the circuit as simplified electrical symbols, and the power and signal connections between the devices. The wiring diagram is used to troubleshoot problems and to make sure that all the connections have been made and that everything is present.

Detailed schematics for individual systems are given in the relevant PIL section. Use the schematics together with the correct electrical harness drawings to reference the connector pin details.

Understanding Electrical Schematics

This section contains sets of electrical schematics for different machine variants.

Use the applicable schematic set to trace wires and connections between electrical devices. In most cases it will be necessary to trace wires across more than one schematic sheet.

The example shows how to follow a typical set of wires from a power supply (+ ve) through to the path to earth (- ve).

Figure 539.

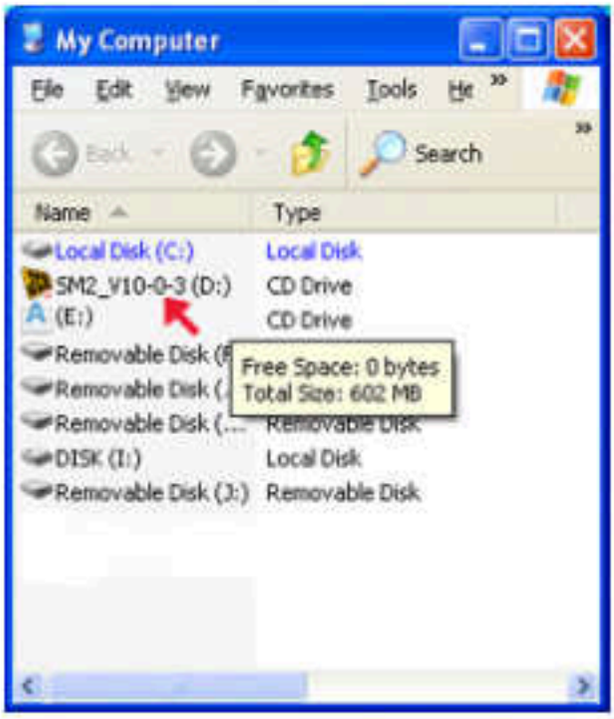


Table 195. Example- Horn Energised

Item[1]	Description	State	Pins[2]	Wire No	Sheet	Explanation
CP27	Fuse box B	+ ve supply	6	118	14	Power supply from 7.5 A fuse
CP18	Relay	closed	1-2		7	Completes circuit to horn
CP06 / MF01	Harness interconnection		30	871	7	
MF40A / RL15A	Harness interconnection		16		7	
MF33	Horn	energised	1-2		7	
SRL2	Splice[3]			600EL	7	
MF40A / RL15A	Harness interconnection		8	600ET	7	

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Figure 679.



4. Select and open the "Setup.exe" application.
5. A new window "JCB Servicemaster Setup" will appear on the screen.
   5.1. Click the "Install V10.0.3" option to start the setup application. Refer to Figure 680.

Figure 680.



6. A new window "Select Setup Language" will appear on the screen. Refer to Figure 681.
   6.1. Use the drop down option to select the suitable language.
   6.2. Click the "OK" option to confirm selected language.

Figure 681.



7. A warning message window will appear on the screen. Refer to Figure 682.
   7.1. Click the "OK" option.

Figure 682.



8. A new window "JCB Servicemaster Installation Wizard" will appear on the screen. Refer to Figure 683.
   8.1. Click the "Next" option to proceed.

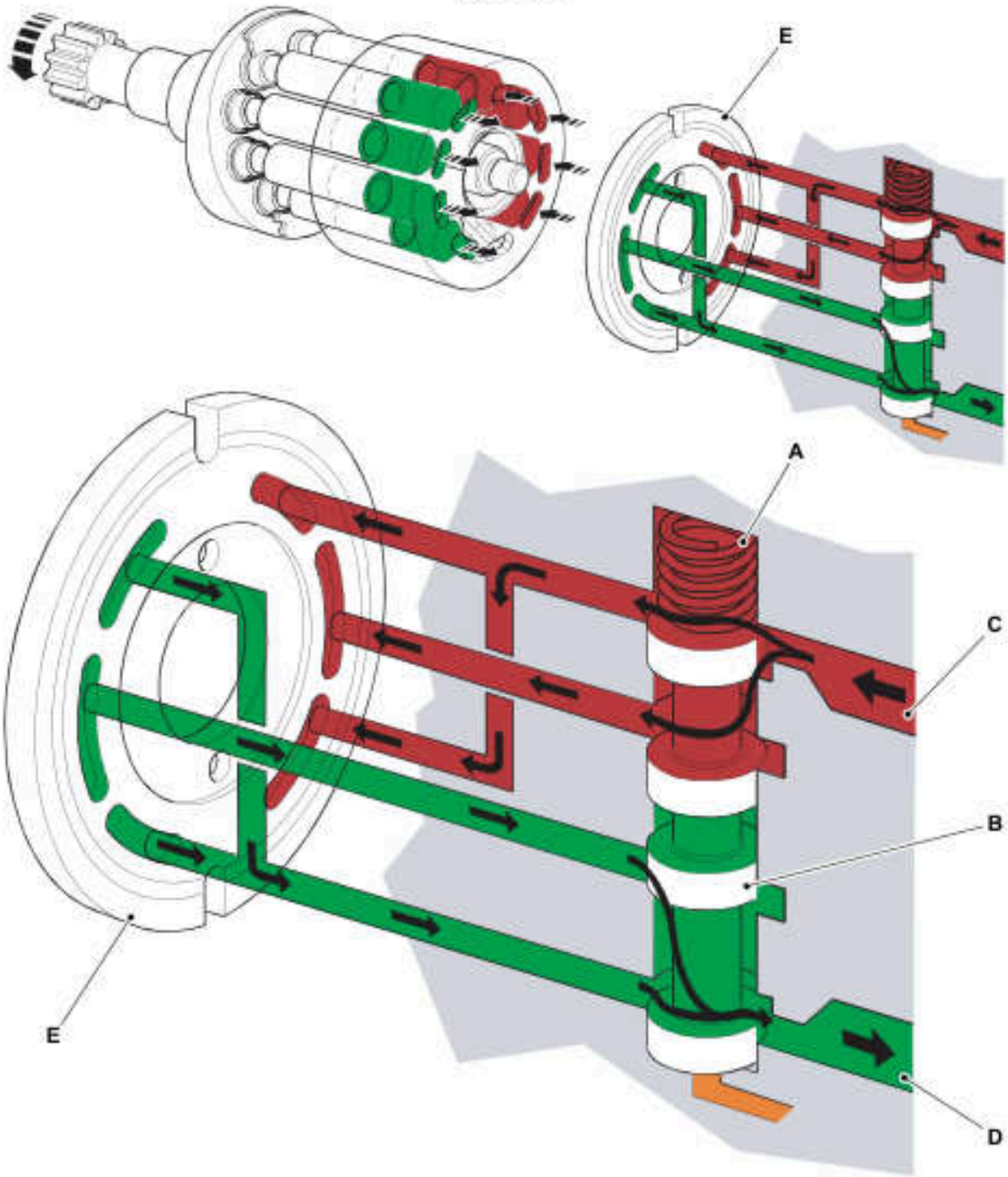
Figure 683.



9. Put "User Name" and "Organization" details into the "Customer Registration" screen. Refer to Figure 684.
   9.1. Click the "Next" option when you inserted details.

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Figure 357.



A Return spring
B 2-speed selector Spool
C Service port 1
D Service port 2
E Valve plate

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