Service Manual

3DX / 4DX Backhoe Loader

Service Manual - 3DX / 4DX Backhoe Loader

Section 1 - General Information

Section 2 - Operator's Manual

Section A - Attachments

Section B - Body and Framework

Section C - Electrics

Section D - Controls

Section E - Hydraulics

Section F - Transmission

Section G - Brakes

Section H - Steering



Publication No.
9813/2050-5



Copyright © 2004 JCB SERVICE. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any other means, electronic, mechanical, photocopying or otherwise, without prior permission from JCB SERVICE.

Issued by JCB Technical Publications, JCB Aftermarket Training, Woodseat, Rocester, Staffordshire, ST14 5BW, England. Tel +44 1889 591300 Fax +44 1889 591400

World Class Customer Support

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-2050-5 Order the manual at mid-west-tech.com >

Contents Page No.

Introduction
About this Publication 1-1
Machine Nomenclature 1-1

Machine Identification
Machine Identification Plate 1-3
Typical Engine Identification Number 1-3
Rear Axle Serial Plate 1-4
Front Axle Serial Plate 1-4
Synchro Shuttle Gearbox Serial Plate 1-5

Torque Settings
Zinc Plated Fasteners and Dacromet Fasteners 1-7
Introduction 1-7
Bolts and Screws 1-7
Hydraulic Connections 1-11
'O' Ring Face Seal System 1-11
'Torque Stop' Hose System 1-14
'Quick-Connect' Pilot Hoses 1-15
Disconnecting 1-15
Connecting 1-15

Service Tools
Numerical List 1-17
Section B 1-20
Section C 1-24
Section E 1-25
Section F 1-33
Section H 1-42
Section K 1-43

Service Aids
Sealing and Retaining Compounds 1-45

Terms and Definitions
Colour Coding 1-47
Hydraulic Schematic Colour Codes 1-47

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

Contents **Page No.**

Safety Notices

Important Information 1
The Operator Manual 1
Safety Warnings 1

Introduction

About This Manual 3
Machine Model and Serial Number 3
Using this Manual 3
Left Side, Right Side 3
Cab/Canopy 3
Cross References 3
Machine Description 4
The JCB Backhoe Loader 4
Intended Use 4
Component List 4
Safety Check List 5
Safety - Yours and Others 5
General Safety 5
Operating Safety 7
Maintenance Safety 10
Identifying Your Machine 15
Machine Identification Plate 15
Machine Identification Plate 15
Typical Product Identification Number (PIN) 16
Component Identification Plates 17
Typical Engine Identification Number 17
Transmission Identification Numbers 17
Axles 17
Hydraulic Pump Serial Plate 17
Gearbox 18

Operation

Introduction 20
Before Entering the Cab 21
Entering and Leaving the Cab 22
Doors and Windows 23
Opening and Closing the Door 23
Opening and Closing the Side Windows 23
Opening and Closing the Rear Window 24
Seat Controls 25
Introduction 25
Seat Control 26
For 3DX 26
For 3DX XTRA, 3DX SUPER, 4DX 27
Seat Belt 28
Static Seat Belt 28
Fasten the Seat Belt 28
Release the Seat Belt 28
Adjusting the Seat Belt 28
Cab Layout 29
From Serial Number 29
Component Key From Serial Number 30
From Serial Number 31
Component Key From Serial Number 33

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

Contents Page No.

Drive Controls, Switches and Instruments 34
Drive Controls 34
Steering Wheel 34
Accelerator Pedal 34
Hand Throttle Lever 34
Foot Brake Pedals 34
Park Brake Lever 35
Transmission Lever (4-Speed Syncro Shuttle Transmission) 35
Gear Lever (Syncro Shuttle Transmission) 37
Transmission Dump Switch 37
Switches 38
Instruments 44
Front Console 44
Side Console 45
Air-Conditioning 48
General 48
Air-Conditioning Controls 48
Operating Levers 49
Introduction 49
Control Layouts 49
Loader Controls 50
Manual Controls 50
Excavator Controls 53
From Serial Number 53
Manual Controls - JCB Diagonal (X) Pattern 53
Servo Excavator Controls 56
From Serial Number 56
Stabiliser Controls (Non-Servo Machines) 59
From Serial Number 59
Lever Controls 59
Stabiliser Controls (Servo Machines) 61
From Serial Number 61
Lever Controls 61
Stabiliser indicator lights 62
Auxiliary Controls 63
6-in-1 Clamshovel 63
Open Bucket 63
Close Bucket 63
Travel Speed modes 64
Economy Mode 64
Power Mode 64
Safety Equipment 65
Boom and Slew Locks 65
Boom Lock 65
Slew Lock 66
Beacon (if fitted) 67
Before Starting the Engine 68
Starting The Engine 70
Starting the Engine in Cold Climate 71
Warning Lights 71

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

New Type Hose

Table 10. 2 Digit JCB Part Number Prefix (From Serial number 2006051)

JCB PREFIX		BORE SIZE	TYPE / RANGE	MAXIMUM WORKING PRESSURE	MINIMUM BURST PRESSURE
1st Digit	2nd Digit				
1	1	6.4 mm	Pilot Servo Hose	103 bar	412 bar
1	2	9.5 mm	Pilot Servo Hose	103 bar	412 bar
2	1	6.4 mm	Low Pressure Hose	190 bar	760 bar
2	2	9.5 mm	Low Pressure Hose	155 bar	620 bar
2	3	12.7 mm	Low Pressure Hose	140 bar	560 bar
2	4	15.9 mm	Low Pressure Hose	100 bar	400 bar
2	5	19.1 mm	Low Pressure Hose	85 bar	340 bar
2	6	25.4 mm	Low Pressure Hose	70 bar	280 bar
2	7	31.8 mm	Low Pressure Hose	40 bar	160 bar
2	8	38.1 mm	Low Pressure Hose	35 bar	140 bar
2	9	50.8 mm	Low Pressure Hose	25 bar	100 bar
3	1	6.4 mm	High Pressure Hose	350 bar	1400 bar
3	2	9.5mm	High Pressure Hose	330 bar	1320 bar
3	3	12.7mm	High Pressure Hose	275 bar	1100 bar
3	4	15.9mm	High Pressure Hose	275 bar	1100 bar
3	5	19.1mm	High Pressure Hose	275 bar	1100 bar
3	6	25.4mm	High Pressure Hose	275 bar	1100 bar
3	7	31.8mm	High Pressure Hose	210 bar	840 bar
4	1	6.4mm	High Pressure Static Hose	350 bar	1400 bar
4	2	9.5mm	High Pressure Static Hose	330 bar	1320 bar
4	3	12.7mm	High Pressure Static Hose	275 bar	1100 bar
4	4	15.9mm	High Pressure Static Hose	275 bar	1100 bar
4	5	19.1mm	High Pressure Static Hose	275 bar	1100 bar
4	6	25.4mm	High Pressure Static Hose	275 bar	1100 bar
4	7	31.8mm	High Pressure Static Hose	210 bar	840 bar
5	5	19.1mm	Extra High Pressure Hose	350 bar	1400 bar
5	6	25.4mm	Extra High Pressure Hose	350 bar	1400 bar
5	7	31.8mm	Extra High Pressure Hose	350 bar	1400 bar

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

Hydraulic Schematics

3DX BSIII with JCB Ecomax Engine

From Serial Number

– 1888500 - 1899999

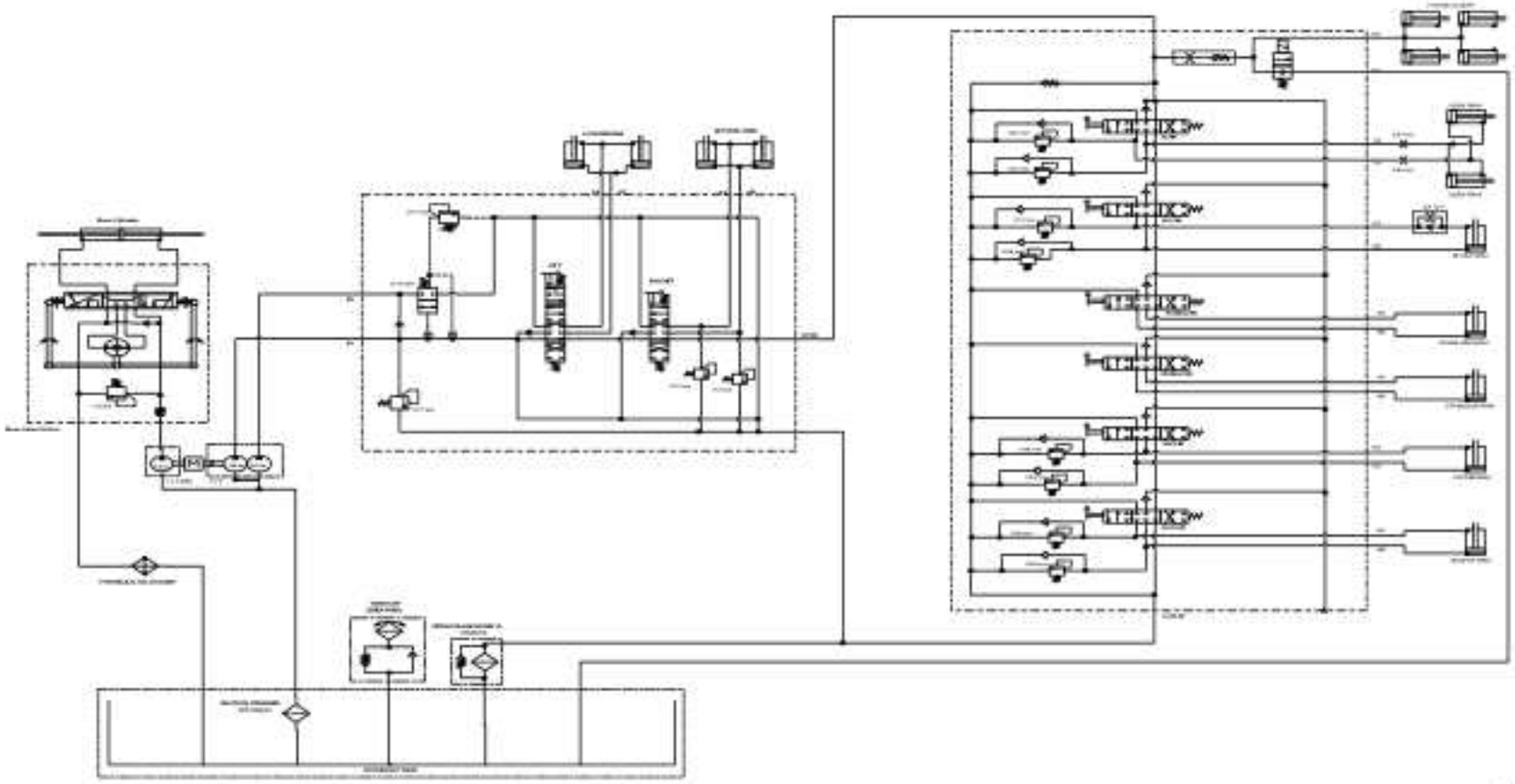


Fig 9. Hydraulic Schematic

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-2050-5
Order the manual at mid-west-tech.com >

Troubleshooting

Fault	Possible Cause	Action
Oil leakage from protection boot	Damage on atmospheric seal	Replace the damaged master cylinder, verify the cleanliness of the mineral oil, if necessary substitute the oil of the circuit in order to avoid contamination. Use only JCB admitted type of oils
Oil leakage from connections	Connector fixing are unscrewed	Fix the connectors at the right torque (as per JCB standard)
Oil leakage from master cylinder body	Breakage - Cracks	Replace the damaged master cylinder
Irregular pressure/operation failure	Master cylinder internal damage	Identify the damaged master cylinder (left or right) and substitute
Single pedal goes to floor (no brake performance), but when both pedals are applied the performance it's good	Internal compensating valve damage	Identify the damaged master cylinder (left or right) and substitute. Consider that the master cylinder damaged it's the opposite of the master cylinder that is not working properly
Insufficient pressure/ long stroke	Air in the brake circuit	Perform the bleeding of the brake circuit: Verify that no siphons are present on the reservoir pipe
Failure to release or return	Master cylinder internal damage or seals swelling due to oil contamination (or non compatible oil)	Replacee the master cylinder and check the oil contamination. In case change the brake circuit oil with JCB admitted type
Locking-Sticking	Master cylinder internal damage or oil contamination which brings to seals swelling or piston locking.	Replace the damaged master cylinder and check the oil contamination. In case change the brake circuit oil with JCB admitted type.
Oil leakage from outlet ports (reservoir, brake and compensating circuit connections)	The torque used to fix the connector it's wrong	Apply the correct value of torque according to JCB standard.
One/two wheels are not free when pedal is/are released	Push rod regulation is not correct: the pedal has not to push the master cylinder piston when is in the rest condition (clearance between push rod and piston has to be mainained)	Regulate the position of clevis/push-rod in order to avoid application of master cylinder when pedal is in the rest condition.
Pedal stroke too long	Bleeding procedure not performed in the correct way	Repeat the bleeding procedure in order to empty air from the brake circuit/master cylinder
Pedal feeling not good (spongy)	The oil reservoir level is too high (more than the maximum level admitted on the reservoir)	Check if the level of oil in the reservoir is in corrispondece of the maximum level admitted, in case adjust the quantity.

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

Assembly

Clean all the components with Use JCB Cleaner and Degreaser to ensure that all threads are free from grease, hydraulic oil and sealant.

Make sure that lubricants used during assembly do not come into contact with the JCB Threadlocker and Sealer (High Strength).

For the correct method of fitting seals to the end cap and piston head refer ⇨ *JCB Ram Sealing Procedure (🗋 172)*.

1 Put the primary rod seal **B** in the head end cover **A**.



Fig 155.

2 Put the rod seal guide ring **C** in the head end cover. ⇨ *Fig 156. (🗋 177)*.



Fig 156.

3 Put the secondary rod seal **D** and the wiper seal **E**.

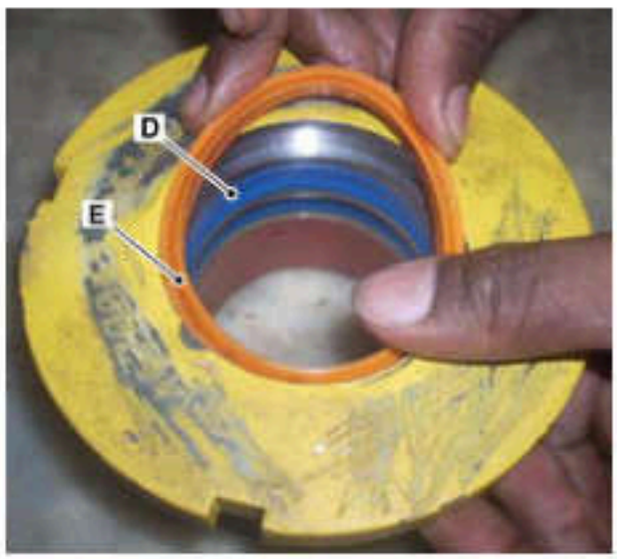


Fig 157.

4 Put the piston O-rings **F** onto the piston.

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >

Hub End Torque

1 Apply thin layer of grease on the wear sleeve **A** and insert the hub end assembly **B** into the stub axle **C**.

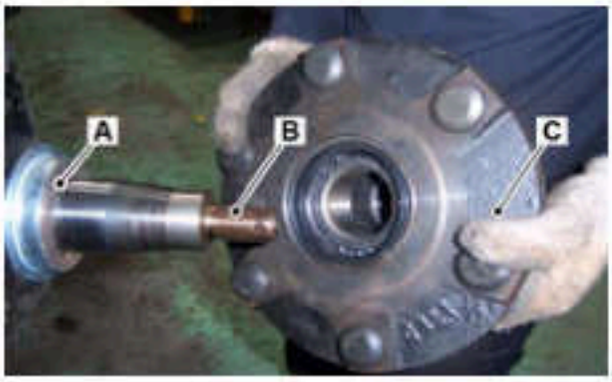


Fig 37.

2 Make sure that the stub axle **C** does not hit the hub end **B**. ⇨ *Fig 37. (□ 44)*.

3 Install the the outer taper roller bearing **D** on the stub axle **C**.

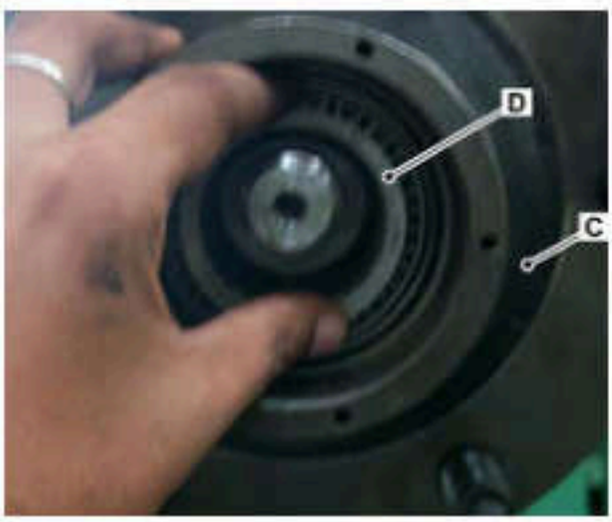


Fig 38.

4 Put the stake nut **E** on the stub axle **C** and turn at least three threads with hand.

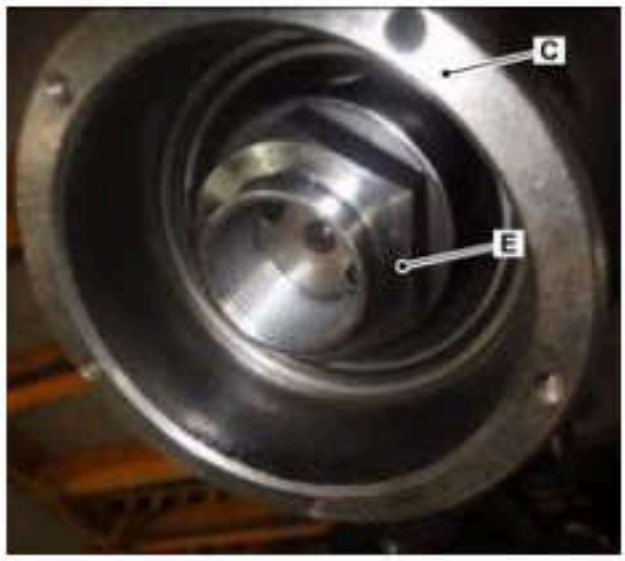


Fig 39.

5 Make sure that the stake nut turns freely.

6 Tighten the stake nut **E** with a pneumatic gun **F** but do not tighten fully.



Fig 40.

7 Make sure that the hub is seated properly on the stab axle.

8 Torque the stake nut to 70 Nm and mark the position on the stub axle and nut.

9 Rotate the hub two times and check for the marks.

10 Make sure the marks are align.

MidWestTech | JCB 3DX, 4DX Backhoe Loader Service Manual | Publication 9813-20... Order the manual at mid-west-tech.com >