

# Service Manual

3CX, 4CX, 214e, 214, 215, 217 & VARIANTS

## Backhoe Loader

From M/c No. 930000 Onwards From M/c No. 903000 Onwards (USA)

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#### Introduction

This publication is designed for the benefit of JCB Distributor Service Engineers who are receiving, or have received, training by JCB Technical Training Department.

These personnel should have a sound knowledge of workshop practice, safety procedures, and general techniques associated with the maintenance and repair of hydraulic earthmoving equipment.

Renewal of oil seals, gaskets, etc., and any component showing obvious signs of wear or damage is expected as a matter of course. It is expected that components will be cleaned and lubricated where appropriate, and that any opened hose or pipe connections will be blanked to prevent excessive loss of hydraulic fluid and ingress of dirt. Finally, please remember above all else **SAFETY MUST COME FIRST!** 

The manual is compiled in sections, the first three are numbered and contain information as follows:

**1** = **General Information** - includes torque settings and service tools.

**2** = **Care & Safety** - includes warnings and cautions pertinent to aspects of workshop procedures etc.

**3** = **Routine Maintenance** - includes service schedules and recommended lubricants for all the

machine.

The remaining sections are alphabetically coded and deal with Dismantling, Overhaul etc. of specific components, for example:

A = Attachments

B = Body & Framework ...etc.

The page numbering in each alphabetically coded section is not continuous. This allows for the insertion of new items in later issues of the manual.

Section contents, technical data, circuit descriptions, operation descriptions etc are inserted at the beginning of each alphabetically coded section.

All sections are listed on the front cover; tabbed divider cards align directly with individual sections on the front cover for rapid reference.

Where a torque setting is given as a single figure it may be varied by plus or minus 3%. Torque figures indicated are for dry threads, hence for lubricated threads may be reduced by one third.

With the exception of slewing operations 'Left Hand' and 'Right Hand' are as viewed from the rear of the machine facing forwards.

#### **Machine Nomenclature**

In this Service Manual, reference is made to machine models, e.g. 3CX, 4CX, these are European machine model names. North American machine models have different names, the table below shows the European and the equivalent North American nomenclature.

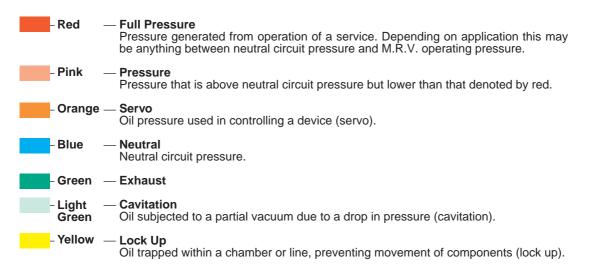
**European** North American

3CX = 214

4CX = 214S, 215S, 217S

## **Colour Coding**

The following colour coding, used on illustrations to denote various conditions of oil pressure and flow, is standardised throughout JCB Service publications.



A390940

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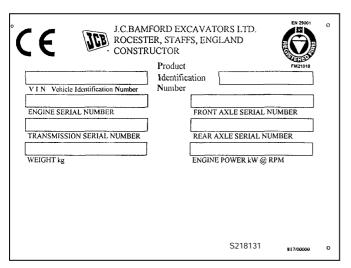
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#### **Machine Identification Plate**

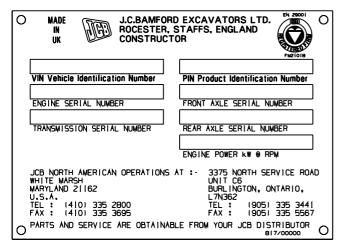
Your machine has an identification plate mounted on the loader tower. The serial numbers of the machine and its major units are stamped on the plate.

The serial number of each major unit is also stamped on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either stamp the new number of the unit on the identification plate, or simply stamp out the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.



U.K. and R.O.W.



**North America** 

A246740

## Typical Vehicle Identification Number (VIN)

SLP 3CX T S V E 930000 **A B G D E G** 

- A World Manufacturer Identification
- B Machine Model
- Steer Type (T= 2WS, F=4WS)
- Build Type (S=Sideshift, C=Centremount, L=Loader)
- Year of Manufacture:
  - 2 = 2002
  - 3 = 2003
  - 4 = 2004
  - 5 = 2005
  - 6 = 2006
  - 7 = 2007
  - 8 = 2008
- Manufacturer Location (E = England)
- G Product Identification Number (PIN)

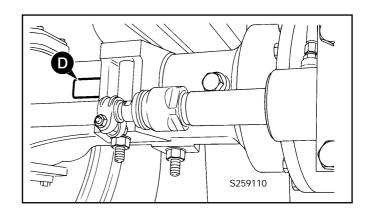
### Typical Engine Identification Number

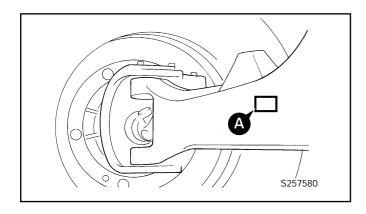
AB 50262 U 500405 P **A B O D E** 

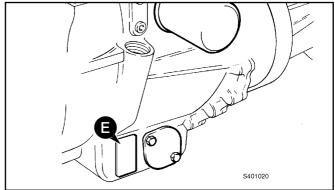
- A Engine TypeAB = 4 cylinder turbo
- **B** Build Number
- Country of Origin
- **D** Engine Sequence Number
- Year of Manufacture

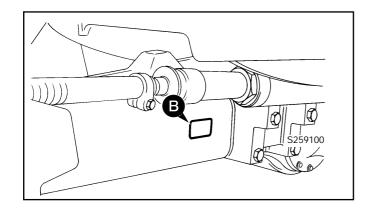
### **Serial Plates**

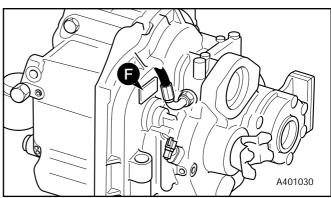
- A Front Axle (2WS machine)
- **B** Front Axle (4WS machine)
- Rear Axle (2WS machine)
- Rear Axle (4WS machine)
- **6** Synchro Shuttle Transmission
- Powershift Transmission
- **G** Engine

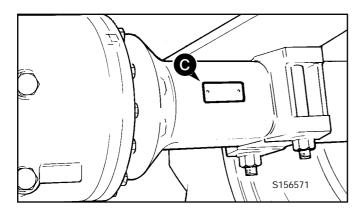


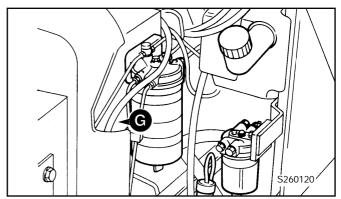












2 - 1 2 - 1

## **Torque Settings**

Use only where no torque setting is specified in the text. Values are for dry threads and may be within three per cent of the figures stated. For lubricated threads the values should be REDUCED by one third.

#### **UNF Grade 'S' Bolts**

<b>Bolt Size</b>	Bolt Size Hexagon (A/F)		Torque Settings		
in	(mm)	in	Nm	kgf m	lbf ft
1/4	(4.2)	7/16	1.4	1.4	10
	(6.3)		14		10
5/16	(7.9)	1/2	28	2.8	20
3/8	(9.5)	9/16	49	5.0	36
7/16	(11.1)	5/8	78	8.0	58
1/2	(12.7)	3/4	117	12.0	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	15/16	238	24.3	175
3/4	(19.0)	11/8	407	41.5	300
7/8	(22.2)	15/16	650	66.3	480
1	(25.4)	11/2	970	99.0	715
11/4	(31.7)	17/8	1940	198.0	1430
11/2	(38.1)	21/4	3390	345.0	2500

#### Metric Grade 8.8 Bolts

Bolt Size	ze Hexagon (A/F)		Size Hexagon (A/F) Torque Settii			orque Setting	ngs	
	(mm)	mm	Nm	kgf m	lbf ft			
M5	(5)	8	7	0.7	5			
M6	(6)	10	12	1.2	9			
M8	(8)	13	28	3.0	21			
M10	(10)	17	56	5.7	42			
M12	(12)	19	98	10	72			
M16	(16)	24	244	25	180			
M20	(20)	30	476	48	352			
M24	(24)	36	822	84	607			
M30	(30)	46	1633	166	1205			
M36	(36)	55	2854	291	2105			

#### **Rivet Nut Bolts/Screws**

Bolt Size		Torque S	Torque Settings (for steel rivet nuts)		
	(mm)	Nm	kgf m	lbf ft	
M3	(3)	1.2	0.12	0.9	
M4	(4)	3.0	0.3	2.0	
M5	(5)	6.0	0.6	4.5	
M6	(6)	10.0	1.0	7.5	
M8	(8)	24.0	2.5	18.0	
M10	(10)	48.0	4.9	35.5	
M12	(12)	82.0	8.4	60.5	

**Note:** All bolts used on JCB machines are high tensile and must not be replaced by bolts of a lesser tensile specification.

## **Service Tools Numerical List**

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## **Service Tools Numerical List**

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Installation Tool Available from:

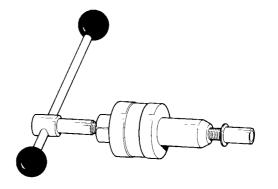
Bollhoff Fastenings Ltd.

Midacre

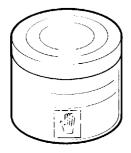
The Willenhall Estate

Rose Hill Willenhall

West Midlands, WV13 2JW



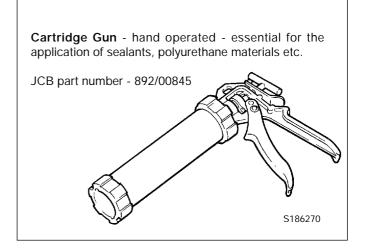
S261210

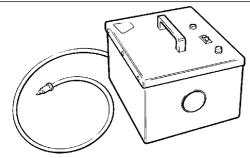


**Hand Cleaner** - special blend for the removal of polyurethane adhesives.

JCB part number - 4104/1310 (454g; 1 lb tub)

S186240

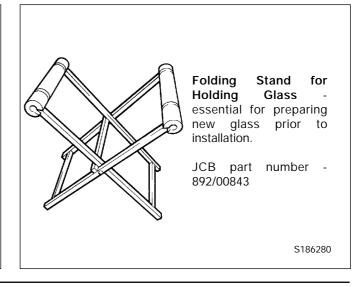




**12V Mobile Oven** - 1 cartridge capacity - required to pre-heat adhesive prior to use. It is fitted with a male plug (703/23201) which fits into a female socket (715/04300).

JCB part number - 992/12300

S186250



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