

Service Manual

2CX, 2DX, 210, 212
& VARIANTS

Backhoe Loader

From M/c No. 657001 TO
763230
&
481196 Onwards

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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. 2CX, 2DX, 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
2CX	=	210S
2DX	=	213S

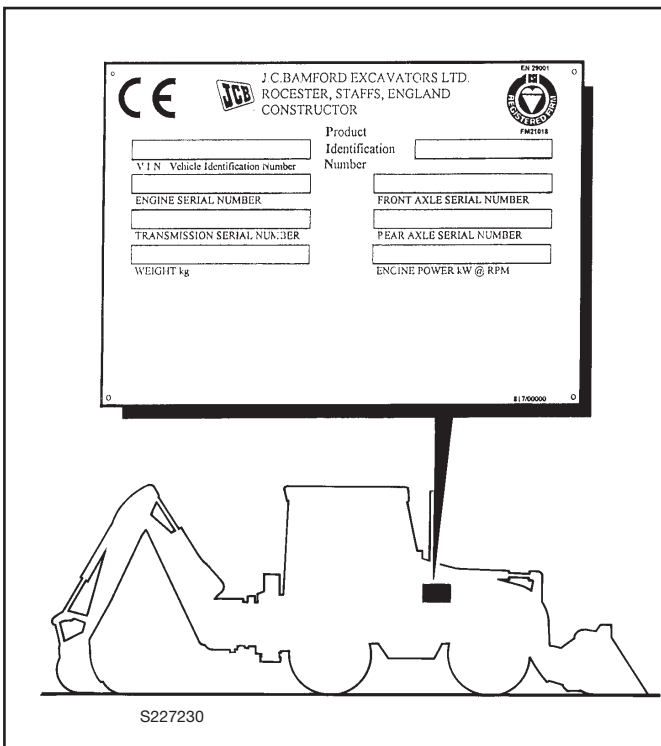
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Machine Identification Plate

Your machine has an identification plate mounted on the right hand side of the machine just below the driver's cab door. 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.



* Typical Machine Identification Number

SLP 2DX T S R E 123456
 A B C D E F G

- A World Manufacturer Identification
- B Machine Model
- C Steer Type (T= 2WS, F=4WS)
- D Build Type (S=Sideshift, C=Centremount, L=Loader)
- E Year of Manufacture:

R = 1994	1 = 2001
S = 1995	2 = 2002
T = 1996	3 = 2003
V = 1997	4 = 2004
W = 1998	5 = 2005
X = 1999	6 = 2006
Y = 2000	7 = 2007
- F Manufacturer Location (E = England)
- G Machine Serial Number:

*

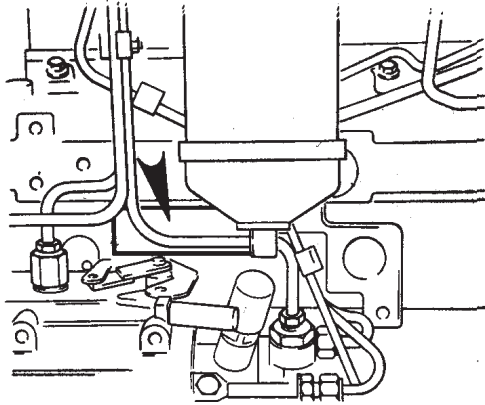
Typical Engine Identification Number

AB 50262 U 500405 P
 A B C D E

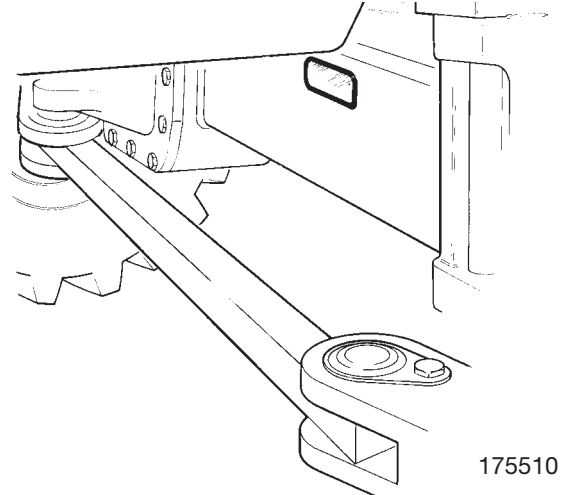
- A Engine Type
AB = 4 cylinder turbo
- B Build Number
- C Country of Origin
- D Engine Sequence Number
- E Year of Manufacture

Unit Identification

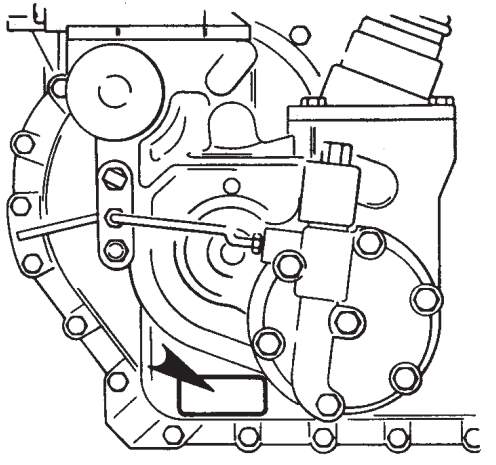
The engine serial number is stamped on a plate mounted on the left hand side of the cylinder block (looking towards the front of the machine).



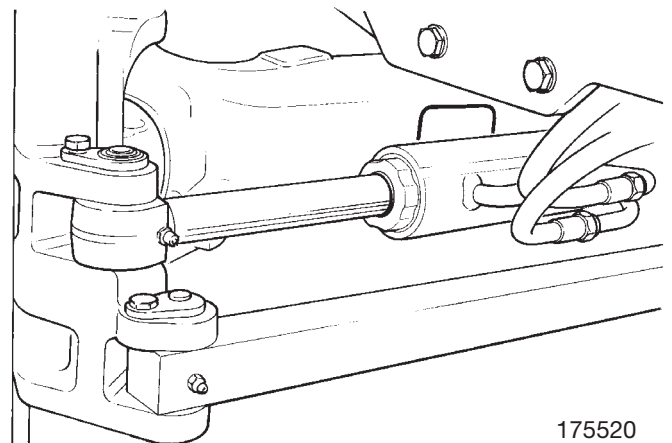
The rear axle serial number is stamped on a plate mounted to the front face of the axle, as shown below.



The Syncro Shuttle serial number is stamped on a label which is mounted to the rear face of the unit.



The front axle serial number is stamped on a plate mounted to the rear face of the axle, as shown below.



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

Bolt Size in	Hexagon (A/F)		Torque Settings		
	(mm)	in	Nm	kgf m	lbf ft
1/4	(6.3)	7/16	14	1.4	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
1 1/4	(31.7)	17/8	1940	198.0	1430
1 1/2	(38.1)	21/4	3390	345.0	2500

Metric Grade 8.8 Bolts

Bolt Size	Hexagon (A/F)		Torque Settings		
	(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

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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816/00193	Blanking Cap	4 - 6	892/00304	Flow Test Adapter	4 - 7
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892/00060	Blanking Plug	4 - 6	* 892/01018	Ram Seal Protection Sleeve 40 mm	4 - 6A
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892/00077	Female Connector	4 - 6	* 892/01021	Ram Seal Protection Sleeve 60 mm	4 - 6A
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892/00153	Test Block for Excavator A.R.V.	4 - 5	* 892/01023	Ram Seal Protection Sleeve 65 mm	4 - 6A
* 892/00167	Ram Seal Protection Sleeve 90mm	4 - 6A	* 892/01024	Ram Seal Protection Sleeve 70 mm	4 - 6A
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892/00264	Pressure Test 'T' Adapter	4 - 4	992/12801	'L' Blades	4 - 2
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892/00268	Flow Monitoring Unit	4 - 4	993/59500	Bearing Extractor	4 - 7
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892/00271	Adapter	4 - 4	1406/0011	Bonded Washer	4 - 5
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892/00275	Adapter	4 - 4	1406/0029	Bonded Washer	4 - 5
892/00276	Adapter	4 - 4	1604/0003	Adapter	4 - 5
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892/00298	Fluke Meter 85	4 - 3	2401/0103	'O' Ring	4 - 5

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 The following parts are replacement items for kits and would normally be included in the kit numbers quoted on page 1/3-1.

Replacement item for kit no. 892/00180
 892/00181 Replacement Plastic Boss 4 - 6

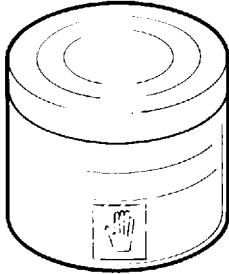
Replacement items for kit no. 892/00253
 892/00201 Replacement Gauge 4 - 4
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 892/00203 Replacement Gauge 4 - 4
 892/00254 Replacement Hose 4 - 4

Replacement items for kit no. 993/59400
 993/59401 Base Plate 4 - 8
 993/59402 Setting Yoke 4 - 8
 993/59403 Mainshaft Adapter (long) 4 - 8
 993/59404 Mainshaft Adapter (short) 4 - 8
 993/59405 Output Yoke Adapter Plate 4 - 8
 * 993/59406 Setting Yoke Support Pillars 4 - 8

Replacement items for kit no. 993/68100
 993/68101 Slide Hammer 4 - 2A
 993/68102 End Stops 4 - 2A
 993/68103 Adaptor - M20 x 5/8" UNF 4 - 2A
 993/68104 Adaptor - M20 x 1" UNF 4 - 2A
 993/68105 Adaptor - M20 x M20 4 - 2A
 993/68106 Adaptor - M20 x M24 4 - 2A
 993/68107 Bar - M20 x M20 X 800MM 4 - 2A
 993/68108 Adaptor - M20 x 7/8" UNF 4 - 2A
 993/68109 Adaptor - M20 x M12 4 - 2A
 993/68110 Adaptor - M20 x 5/8" UNF (Shoulder) 4 - 2A
 993/68111 Adaptor - M20 x 1/2" UNF 4 - 2A

Service Tools

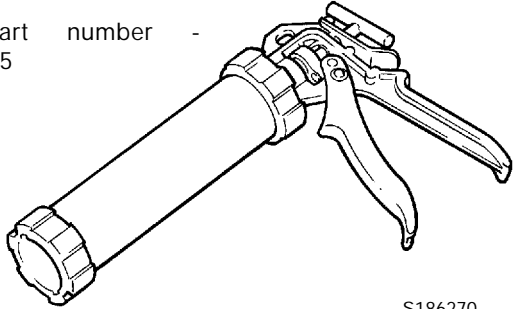
Section B - Body & Framework



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

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

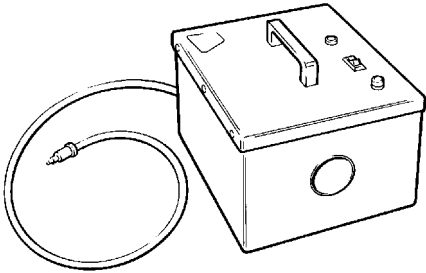
S186240



Cartridge Gun - hand operated - essential for the application of sealants, polyurethane materials etc.

JCB part number - 892/00845

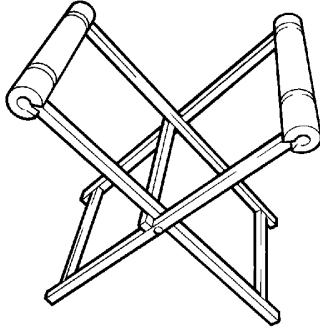
S186270



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



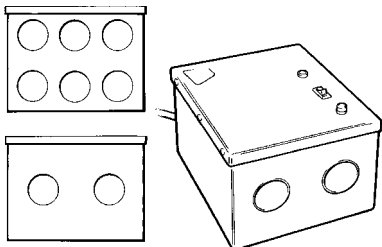
Folding Stand for Holding Glass - essential for preparing new glass prior to installation.

JCB part number - 892/00843

S186280

240V Static Oven - available with 2 or 6 cartridge capacity - required to pre-heat adhesive prior to use. No plug supplied. Note: 110V models available upon request - contact JCB Technical Service.

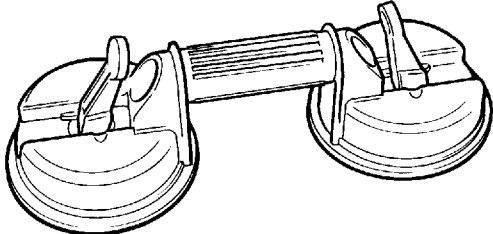
JCB part number:
992/12400 - 2 Cartridge x 240V
992/12600 - 6 Cartridge x 240V



S186260

Glass Lifter - minimum 2 off - essential for glass installation, 2 required to handle large panes of glass. Ensure suction cups are protected from damage during storage.

JCB part number - 892/00842



S186300

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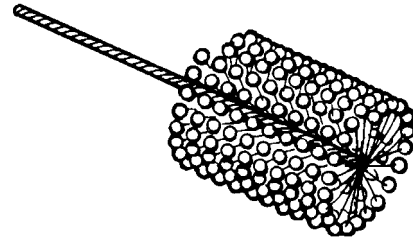
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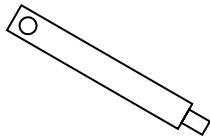
Service Tools (cont'd)**Section K - Engine**

892/00041 De-glazing Tool for Cylinder Bores (to assist bedding-in of new piston rings)

Note: For other engine tools refer to the Engine Service Manual.



S192390



S216250

* 892/00956 Timing pin for fuel injection pump (AK, AM, AR)

Sealing and Retaining Compounds

JCB Multi-Gasket	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65mm diameter.	4102/1212	
* JCB High Strength Threadlocker	A high strength locking fluid for use with threaded components.	4102/0551	
* JCB Retainer (High Strength)	For all retaining parts which are unlikely to be dismantled.	4101/0651	
* JCB Threadlocker and Sealer	A high strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50mm diameter, and for hydraulic fittings up to 25mm diameter.	4101/0252	
* Threadseal	A medium strength thread sealing compound.	4102/1951	
* Threadlocker	A locking fluid for use on threads larger than 50mm dia.	4101/0451	
* Activator	A cleaning primer which speeds the curing rate of anaerobic products.	4104/0251 4104/0253	150ml 1 litre
* Cleaner / Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	400ml
Direct Glazing Kit	For one pane of glass, comprises items marked † below plus applicator nozzle etc.	993/55700	
† Ultra Fast Adhesive	For direct glazing	4103/2109	310 ml
† Active Wipe 205	For direct glazing	4104/1206 4104/1203	30 ml 250 g
† Black Primer 206J	For direct glazing	4201/4906	30 ml
Clear Silicone Sealant	To seal butt jointed glass	4102/0933	
Black Polyurethane Sealant	To finish exposed edges of laminated glass	4102/2309	310 ml
JCB Cleaner & Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1538	Aerosol