

# Service Manual

## ARTICULATED DUMP TRUCK 714 & 718

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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 the JCB 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 earth moving equipment.

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

the manual is divided into 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, operational 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.

'Left Hand' and 'Right Hand' are as viewed from the rear of the machine or engine

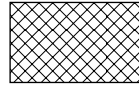
This Service Manual covers the following machines:

714 Dumper Truck from machine serial number 830000

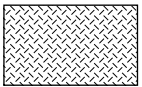
\* 718 Dumper Truck from machine serial number 832000



Neutral Circuit Pressure.



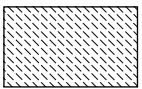
Oil subjected to a partial vacuum due to a drop in pressure (cavitation).



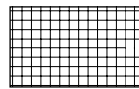
Pressure generated by the operation of a service. Depending on application this may be anything between Neutral Circuit Pressure and M.R.V. Operation Pressure.



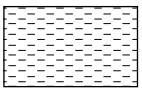
Oil trapped within a chamber or line preventing movement of components (lock-up).



Pressure that is above Neutral Circuit Pressure but lower than that denoted above.



Oil pressure used in a controlling device (servo).



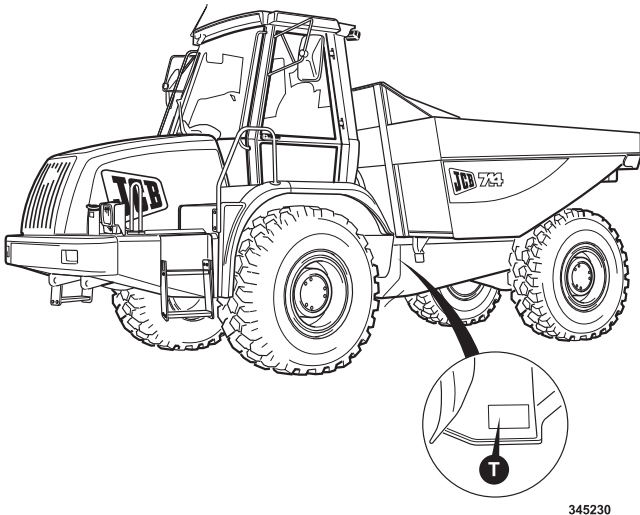
Exhaust.

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Vehicle Identification Plate	1 - 1
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**Identification**

**Vehicle Identification Plate**

Your machine has an identification plate, **T**, mounted on the left side of the machine as shown. The serial number of the machine and its major units are stamped on the plate



345230

**Explanation of the Vehicle Identification Number (VIN)**

**SLP 714 Y E 537000**  
**A B C D E**

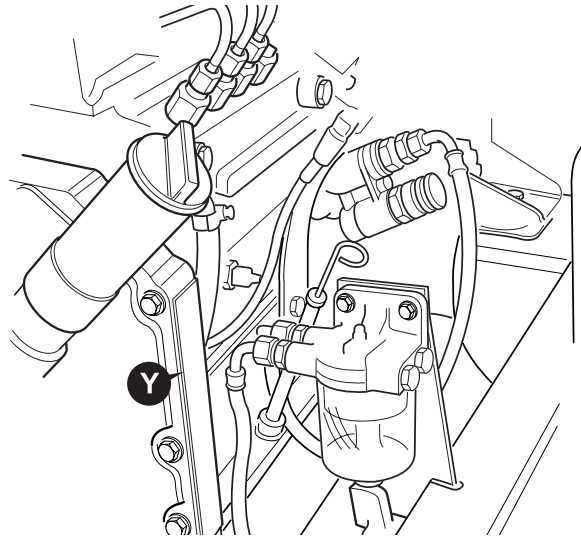
A	World Manufacturer Identification	SLP = JCB
B	Machine Model	714
C	Year of Manufacture	
	P = 1993	V = 1997
	R = 1994	W = 1998
	S = 1995	X = 1999
	T = 1996	Y = 2000
D	Manufacturing Location	E = England
E	Machine Serial Number	0537000

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.

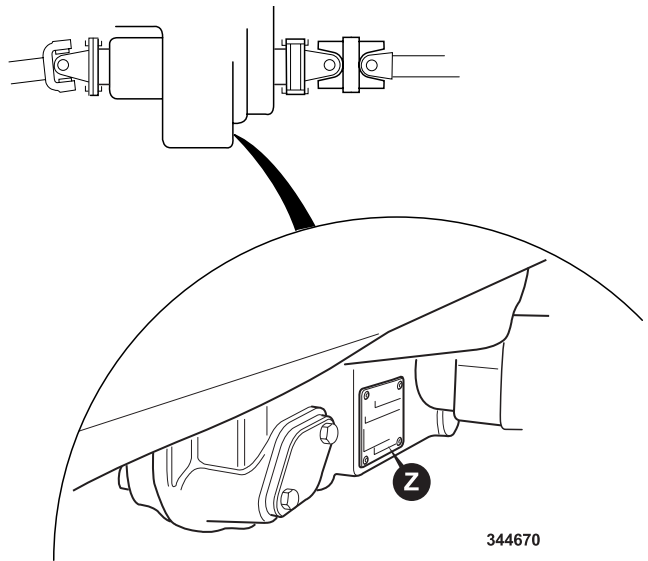
The machine and engine serial numbers can help identify exactly the type of equipment you have.

**Unit Identification**

The engine serial number is stamped on a plate, **Y**, which is fastened to the left side of the cylinder block



The Transmission serial number is stamped on a plate, **Z**, located at the bottom front of the transmission unit, as shown.



344670

## Torque Settings

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

### UNF Grade 'S' Bolts

Bolt Size		Hexagon (A/F)	Torque Settings		
in	(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	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	1 5/16	238	24.3	175
3/4	(19)	1 1/8	407	41.5	300
7/8	(22.2)	1 5/16	650	66.3	480
1	(25.4)	1 1/2	970	99	715
1 1/4	(31.7)	1 7/8	1940	198.0	1430
1 1/2	38.1	2 1/4	3390	345.0	2500

### Metric Grade 8.8 Bolts

Bolt Size		Hexagon (A/F)	Torque Settings		
(mm)	(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 Settings		
(mm)	(mm)	Nm	kgf m	lbf ft
M3	(3)	1.2	0.12	0.9
M4	(4)	3.0	0.3	2
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	4.9	35.5
M12	(12)	82.0	8.4	60.5

**NOTE:** All bolts used on JCB equipment are high tensile and must not under any circumstances be replaced with bolts of a lesser tensile specification.

## Service Tools

### \* Numerical List

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1406/0014	Bonded Washer	6-1	892/00255	Pressure Test Adaptor 6-2
1406/0018	Bonded Washer	6-1	892/00256	Pressure Test Adaptor 6-2
1406/0021	Bonded Washer	6-1	892/00257	Pressure Test Adaptor 6-2
1406/0029	Bonded Washer	6-1	892/00258	Pressure Test Adaptor 6-2
4003/0211	Anti-Seize Paste	9-1	892/00259	Pressure Test Adaptor 6-2
4101/0250	Thread locker and Sealer (10 ml)	9-1	892/00260	Pressure Test Adaptor 6-2
4101/0251	Threadlocker and Sealer (50 ml)	9-1	892/00261	Pressure Test Adaptor 6-2
4101/0451	Threadlocker (50 ml)	9-1	892/00262	Pressure Test Adaptor 6-2
4101/0550	Threadlocker and Sealer (High Strength) (10 ml)	9-1	892/00263	Pressure Test Adaptor 6-1
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4101/0651	Retainer (High Strength) (50 ml)	9-1	892/00265	Pressure Test Adaptor 6-1
4102/0550	Threadlocker and Sealer (High Strength) (10 ml)	9-1	892/00279	Gauge 6-2
4102/0551	Threadlocker (High Strength) (50 ml)	9-1	892/00282	Shunt 5-1
4102/0901	Clear Silicone Sealant	9-1	892/00283	Tool Kit Case 5-1
4102/1212	Multi-Gasket (50 ml)	9-1	892/00284	Digital Tachometer 5-1
4102/1951	Threadseal (50 ml)	9-1	892/00285	Hydraulic Oil Temperature Probe 5-1
4103/2109	Ultra Fast Adhesive (310 ml)	9-1	892/00286	Surface Temperature Probe 5-1
4104/0251	Activator (Aerosol) (1 litre)	9-1	892/00298	Fluke Meter 5-1
4104/0253	Activator (Bottle) (200 ml)	9-1	892/00334	Ram Seal Fitting Tool 6-2
4104/1203	Active Wipe 205 (250 g)	9-1	892/00706	Test Probe 6-2
4104/1557	JCB Cleaner/Degreaser (Aerosol) (400 ml)	9-1	892/00817	Heavy Duty Socket 7-1
4201/4906	Black Primer 206J (30 ml)	9-1	892/00818	Heavy Duty Socket 7-1
816/00189	Blanking Cap	6-1	892/00819	Heavy Duty Socket 7-1
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816/00193	Blanking Cap	6-1	892/00843	Glass Stand 4-1
816/00196	Blanking Cap	6-1	892/00844	Long Knife 4-2
816/00197	Blanking Cap	6-1	892/00846	Glass Extractor (Handles) 4-2
816/00294	Blanking Cap	6-1	892/00847	Nylon Spatula 4-1
816/15118	Pressure Test Adaptor	6-2	892/00848	Wire Starter 4-2
816/55038	Pressure Test Adaptor	6-1	893/00849	Braided Cutting Wire 4-2
816/55040	Pressure Test Adaptor	6-1	892/00860	Bearing Remover Shim 7-4
825/99849	Dummy Bush	4-3	892/00861	Bearing Remover Base tool 7-4
825/99852	Bearing Locator	4-3	892/00862	Tab Washer Fitting Tool 7-2
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826/01177	M8 x 18mm Rivet Nut	4-1	892/00891	Seal Fitting Tool Assembly 7-2
826/01176	M10 x 23mm Rivet Nut	4-1	892/00909	Puller 7-2
826/01179	M6 x 16mm Rivet Nut	4-1	892/01000	Bearing Puller 7-2
826/01333	M10 x 26mm Rivet Nut	4-1	892/01001	Bearing Tool 7-3
892/00041	De-glazing Tool	8-1	892/01002	Spring Compressor 7-3
892/00055	Blanking Plug	6-1	892/01004	Bearing Tool 7-3
892/00056	Blanking Plug	6-1	892/01005	Bearing Tool 7-3
892/00057	Blanking Plug	6-1	892/01006	110 Volt Heater 7-3
892/00058	Blanking Plug	6-1	892/01007	Pipe Swagging Tool 7-3
892/00059	Blanking Plug	6-1	892/01008	Pipe Swagging Tool 7-3
892/00060	Blanking Plug	6-1	892/01009	Pipe Swagging Tool 7-3
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892/00223	Hand Pump	6-2		

**Service Tools (cont'd)****Numerical List (cont'd)****Page No**

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892/01017	Ram Protection Sleeves	6-3
892/01018	Ram Protection Sleeves	6-3
892/01019	Ram Protection Sleeves	6-3
892/01021	Ram Protection Sleeves	6-3
892/01023	Ram Protection Sleeves	6-3
892/01024	Ram Protection Sleeves	6-3
892/01025	Ram Protection Sleeves	6-3
892/01026	Ram Protection Sleeves	6-3
892/01034	Transmission Diagnostic Kit	7-1
* 892/01066	Combined Comms Lead	7-4
926/15500	Rubber Spacer Blocks	4-1
992/04000	Torque Multiplier	7-1
992/07603	Replacer - Bearing Cup	7-2
992/09300	55mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/09400	65mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/09500	75mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/09600	85mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/09700	95mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/09900	115mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/10000	125mm A/F Hexagon Spanner for Ram Pistons and End Caps	6-2
992/12800	Cut-Out Knife	4-2
992/12801	'L' Blades	4-2

The Following parts are replacement items for kits and would normally be found in the kit numbers above.

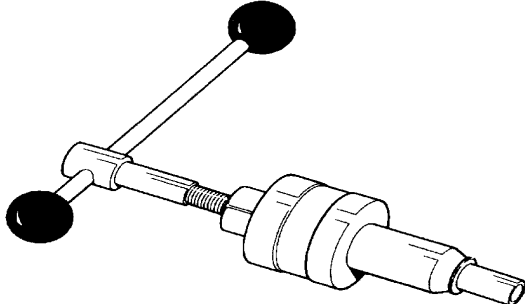
Replacement item for kit no. 892/00253

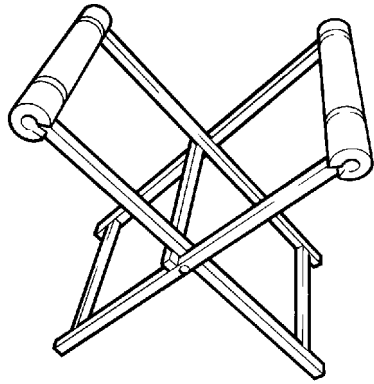
892/00201	Replacement Gauge	6-1
892/00202	Replacement Gauge	6-1
892/00203	Replacement Gauge	6-1
892/00254	Replacement Gauge	6-1



**Service Tools**

**Section B - Body and Framework**

<p>826/01179 M6 x 16mm Rivet Nut              826/01106 M6 x 19mm Rivet Nut              826/01177 M8 x 18mm Rivet Nut              826/01176 M10 x 23mm Rivet Nut              826/01333 M10 x 26mm Rivet Nut</p> <p>Installation Tool available from:              Bolhoff Fastenings Ltd.              Midacre              The Willenhall Estate              Rose Hill              Willenhall              West Midlands, WV13 2JW</p>	<p>S150970</p> 
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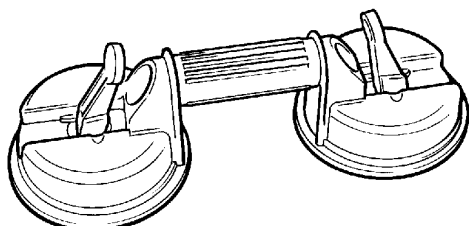
**Folding Stand for Holding Glass** - essential for preparing new glass prior to installation.

JCB part number - 829/00843

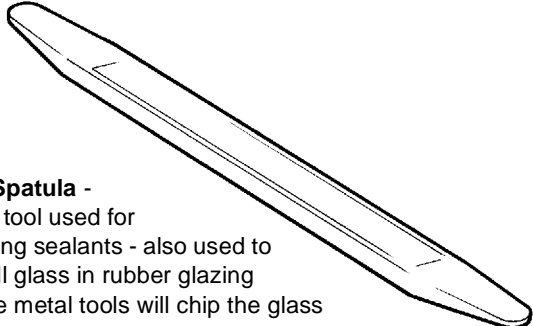
S186280

**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 - 829/00842



S186300



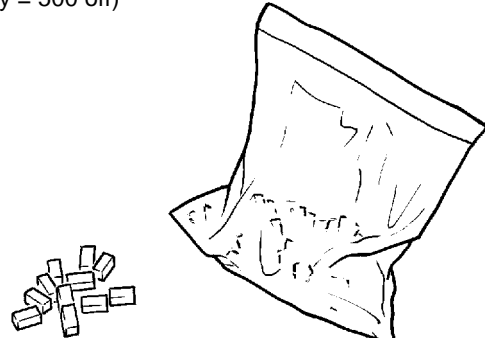
**Nylon Spatula** - general tool used for smoothing sealants - also used to re-install glass in rubber glazing because metal tools will chip the glass edge.

JCB part number - 829/00847

S186470

**Rubber Spacer Blocks** - used to provide the correct set clearance between glass edge and cab frame.

JCB part number - 926/15500  
 (unit quantity = 500 off)

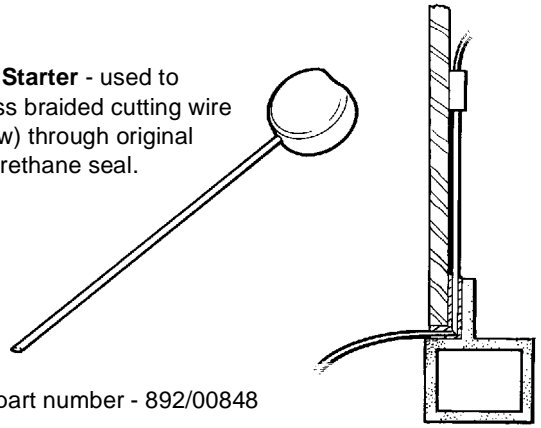


S186550

**Service Tools (cont'd)**

**Section B - Body and Framework**

**Wire Starter** - used to access braided cutting wire (below) through original polyurethane seal.

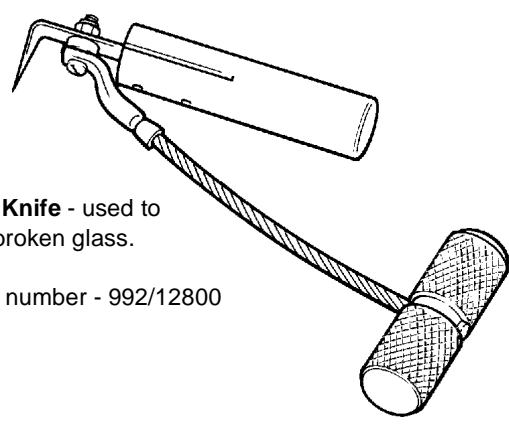


JCB part number - 892/00848

S186310

**Cut-Out Knife** - used to remove broken glass.

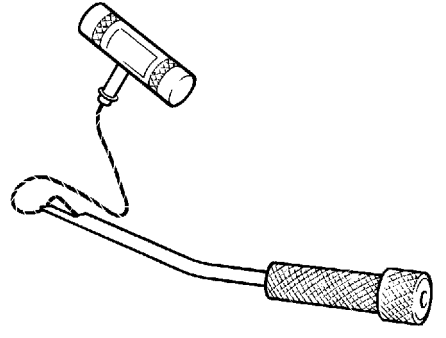
JCB part number - 992/12800



S186340

**Glass Extractor (Handles)** - used with braided cutting wire (below) to cut out broken glass.

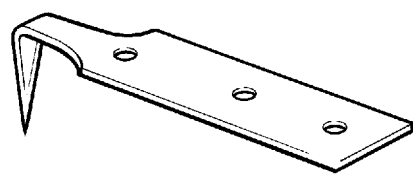
JCB part number - 892/00846



S186320

**'L' Blades** - 25mm (1in) cut - replacement blades for cut-out knife (above).

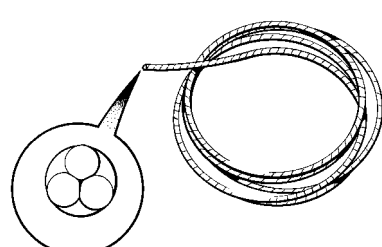
JCB part number - 992/12801 (unit quantity = 5 off)



S186350

**Braided Cutting Wire** - consumable heavy duty cut-out wire used with the glass extraction tool (above).

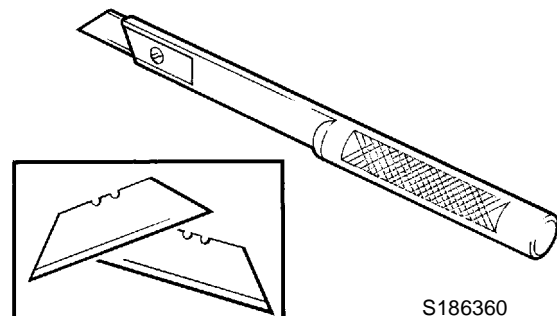
JCB part number - 892/00849  
(approx. 25m length)



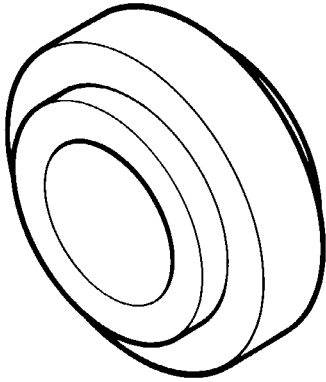
S186330

**Long Knife** - consumable heavy duty cut-out wire used with the glass extraction tool (above).

JCB part number - 892/00844



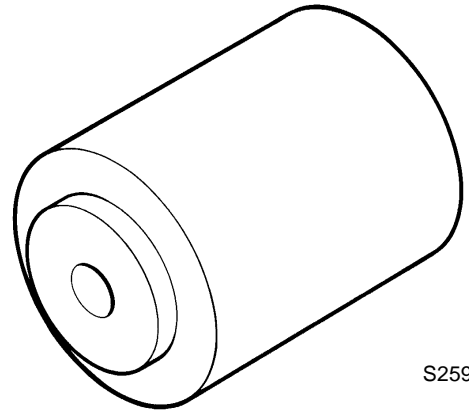
S186360

**Service Tools (cont'd)****Section B - Body and Framework**

S259260

**Dummy Bush** - used with bearing locator to set up Upper Centre Pivot.

JCB part number - 825/99849



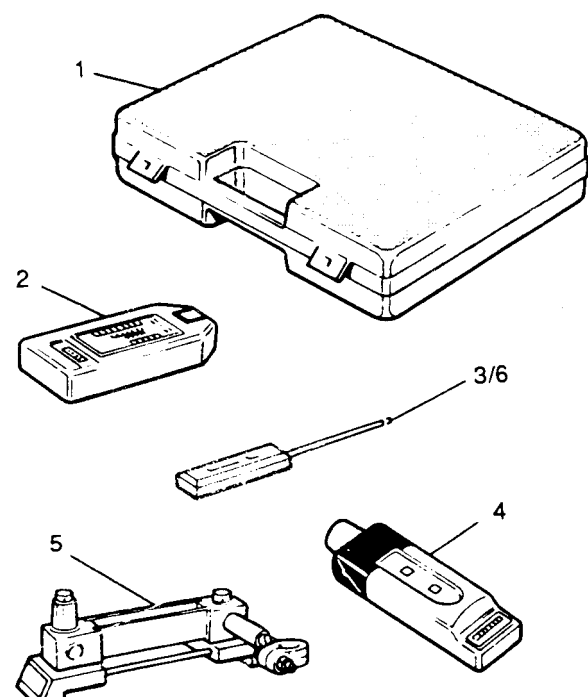
S259270

**Bearing Locator** - used with bearing dummy bush to set up Upper Centre Pivot.

JCB part number - 825/99852

**Service Tools (cont'd)**

**Section C - Electrics**



1

2

3/6

4

5

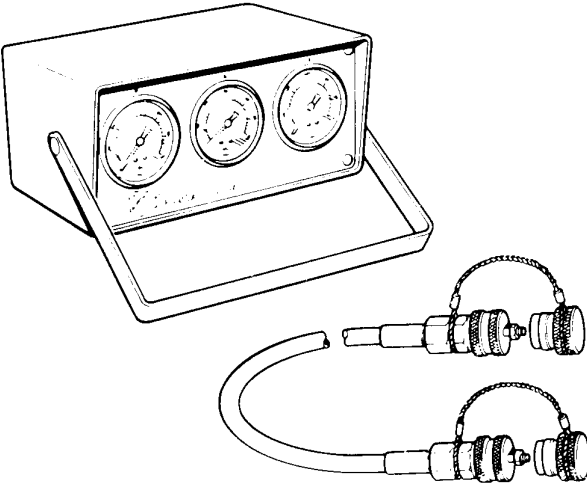
AVO Test Kit

1	892/00283	Tool Kit Case
2	892/00298	Fluke Meter
3	892/00286	Surface Temperature Probe
4	892/00284	Venture Microtach Digital Tachometer
5	892/00282	100 amp Shunt - open type
6	892/00285	Hydraulic Temperature Probe

S188230

**Service Tools (cont'd)**

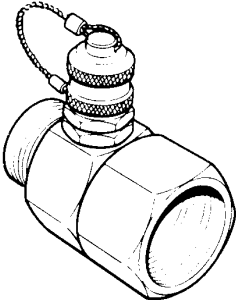
**Section E - Hydraulics**



Hydraulic Circuit Pressure Test Kit

892/00253	Pressure Gauge Kit
892/00201	Replacement Gauge 0-20 bar (0-300 lbf/in <sup>2</sup> )
892/00202	Replacement Gauge 0-40 bar (0-600 lbf/in <sup>2</sup> )
892/00203	Replacement Gauge 0-400 bar (0-6000 lbf/in <sup>2</sup> )
892/00254	Replacement Hose


S188120



S188130

Pressure Test 'T' Adaptors

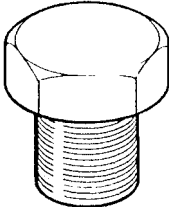
892/00262	1/4in M BSP x 1/4in F BSP x Test Point
816/55038	3/8in M BSP x 3/8in F BSP x Test Point
816/55040	1/2in M BSP x 1/2in F BSP x Test Point
892/00263	5/8in M BSP x 5/8in F BSP x Test Point
892/00264	3/4in M BSP x 3/4in F BSP x Test Point
892/00265	1in M BSP x 1in F BSP x Test Point



S193880

Bonded Washers

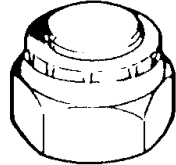
1406/0011	1/4in BSP
1406/0018	1/2in BSP
1406/0014	5/8in BSP
1406/0021	3/4in BSP
1406/0029	1 1/4in BSP



S193870

Female Cone Blanking Cap

892/00055	1/4in BSP
892/00056	3/8in BSP
892/00057	1/2in BSP
892/00058	5/8in BSP
892/00059	3/4in BSP
892/00060	1in BSP



S193880

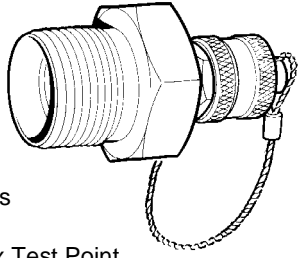
Male Cone Blanking Cap

816/00294	1/4in BSP
816/00189	3/8in BSP
816/00190	1/2in BSP
816/00197	5/8in BSP
816/00196	3/4in BSP
816/00193	1in BSP

**Service Tools (cont'd)**

**Section E - Hydraulics**

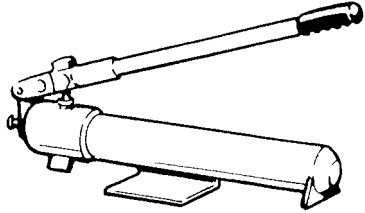
S200140



Pressure Test 'T' Adaptors

892/00255	1/4in BSP x Test Point
892/00256	3/8in BSP x Test Point
892/00257	1/2in BSP x Test Point
892/00258	5/8in BSP x Test Point
816/15118	3/4in BSP x Test Point
892/00259	1in BSP x Test Point
892/00260	1 1/4in BSP x Test Point
892/00261	5/8in UNF x Test Point

S193850

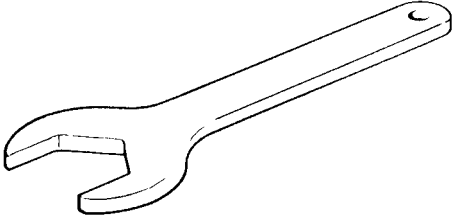


Hand Pump Equipment

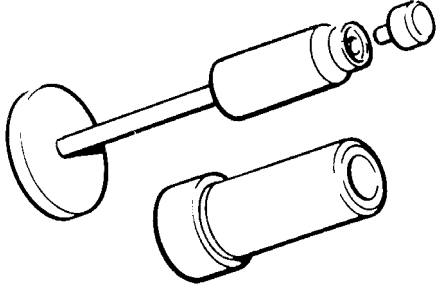
892/00223	Hand Pump
892/00137	Micro-bore Hose 1/4in BSP x 5 metres
892/00262	1/4in M BSP x 1/4in F BSP x Test Point
892/00706	Test Probe
892/00279	Gauge 0 - 400 bar (0 - 6000 lbf/in <sup>2</sup> )

Hexagon Spanners for Ram Pistons and End Caps

992/09300	55mm A/F
992/09400	65mm A/F
992/09500	75mm A/F
992/09600	85mm A/F
992/09700	95mm A/F
992/09900	115mm A/F
992/10000	125mm A/F

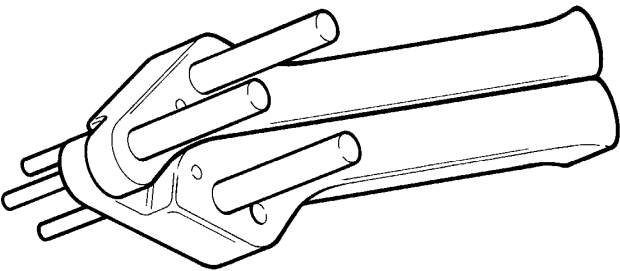


S193930



S216230

892/00180	Seal Fitting Tool for fitting O-ring and King Ring to Steer Valve.
892/00181	Replacement Plastic Boss

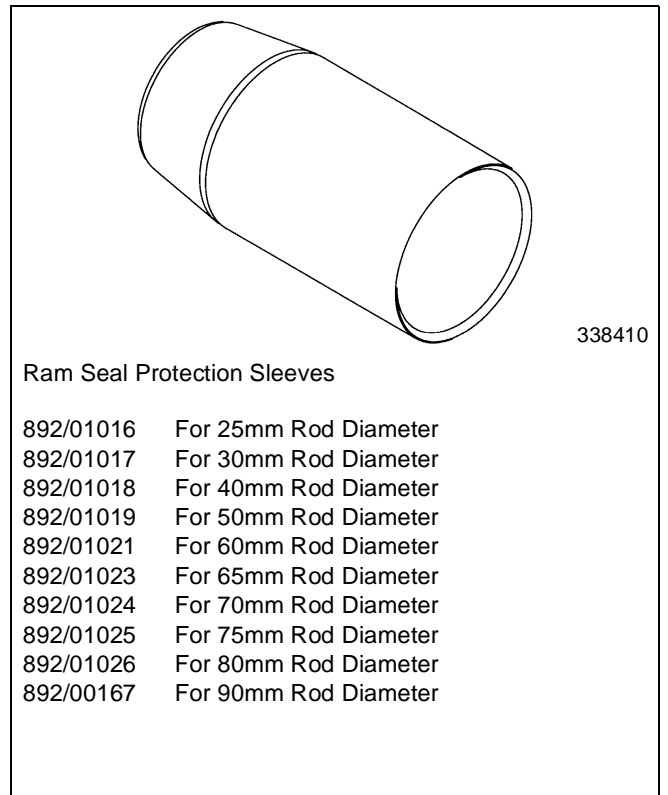
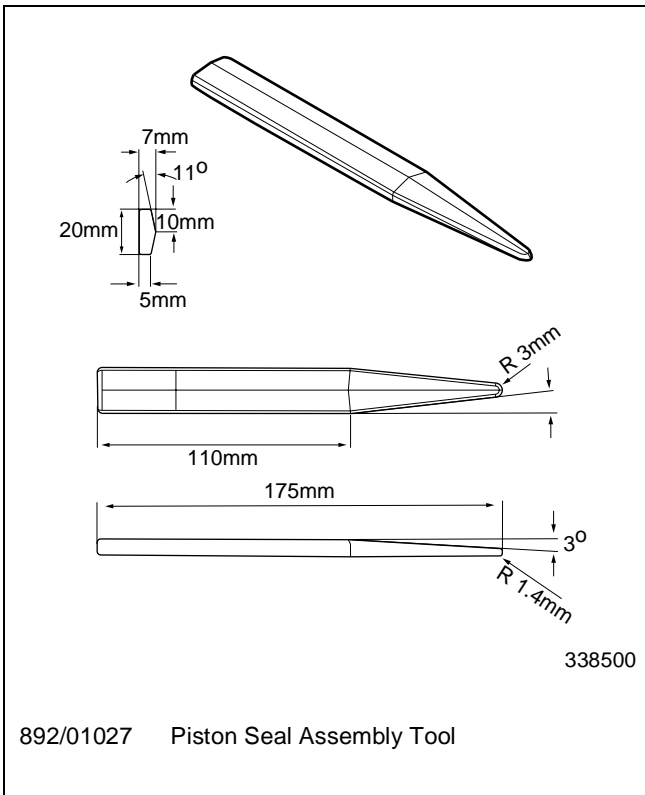


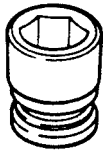
S216250

892/00334	Ram Seal Fitting Tool
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**Service Tools (cont'd)**

**Section E - Hydraulics**

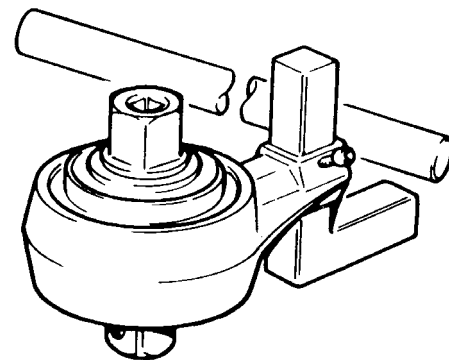


**Service Tools (cont'd)****\* Section F - Transmission**

S197250

Heavy Duty Socket for Durlock Bolts

892/00817 17mm A/F x 3/4in Square Drive  
892/00818 22mm A/F x 3/4in Square Drive  
892/00819 15mm A/F x 1/2in Square Drive



892/04000 Torque Multiplier

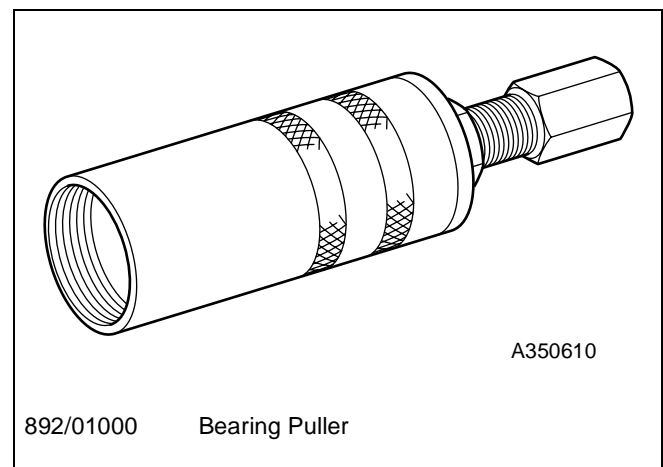
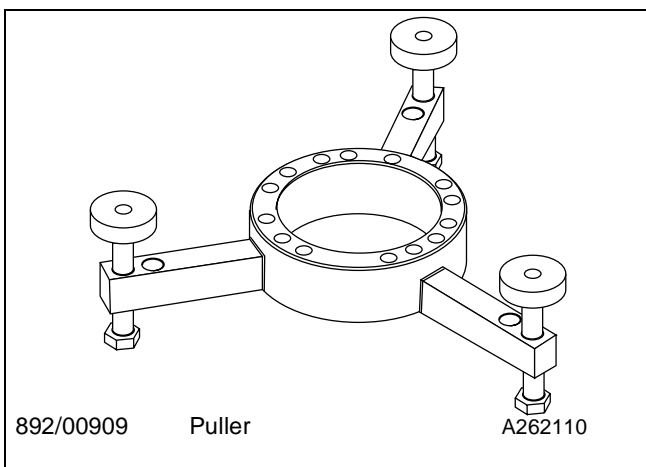
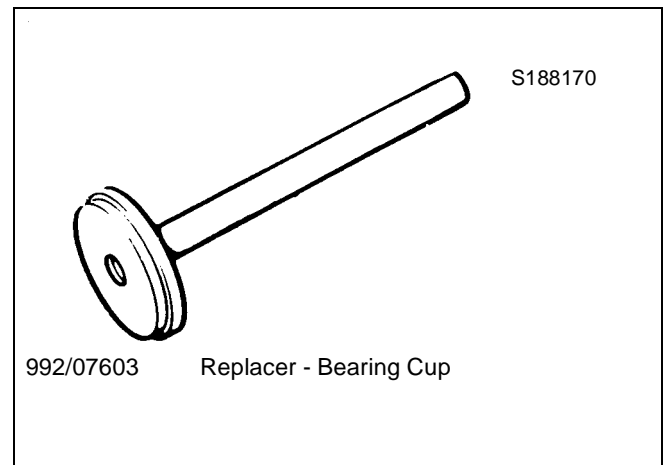
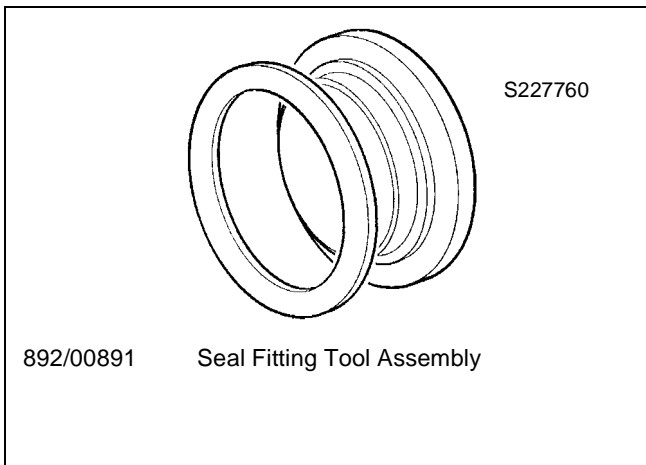
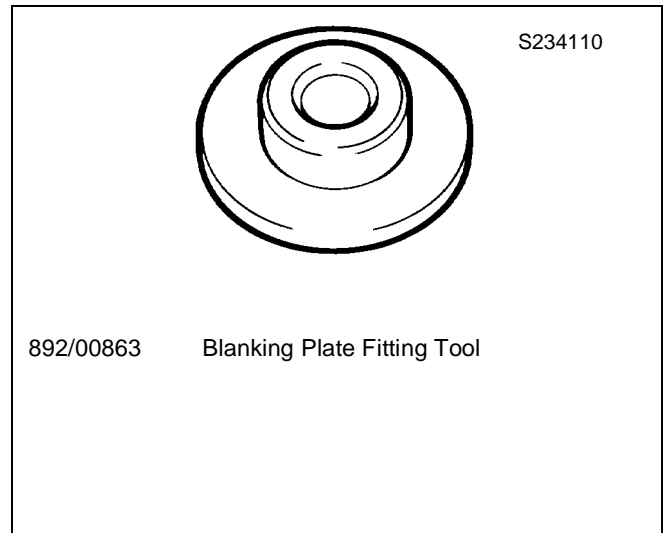
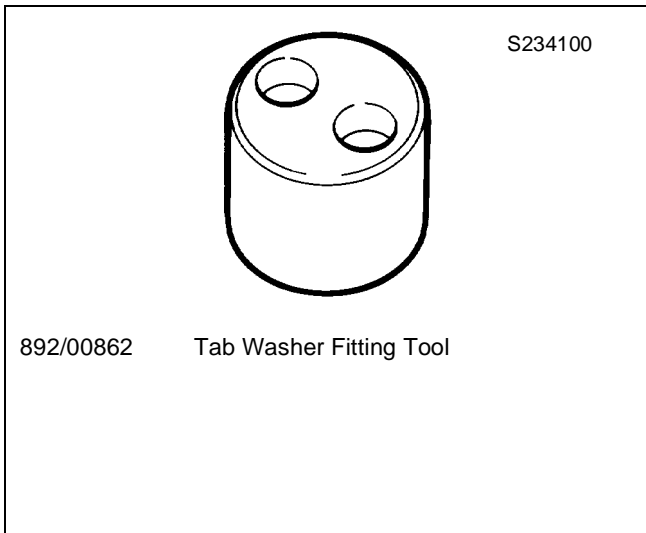
Use in conjunction with a torque wrench to give a 5:1 multiplication when tightening pinion nuts etc.

S197030



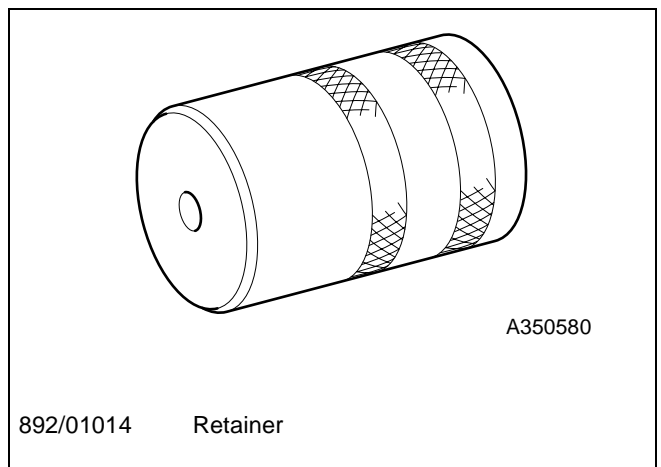
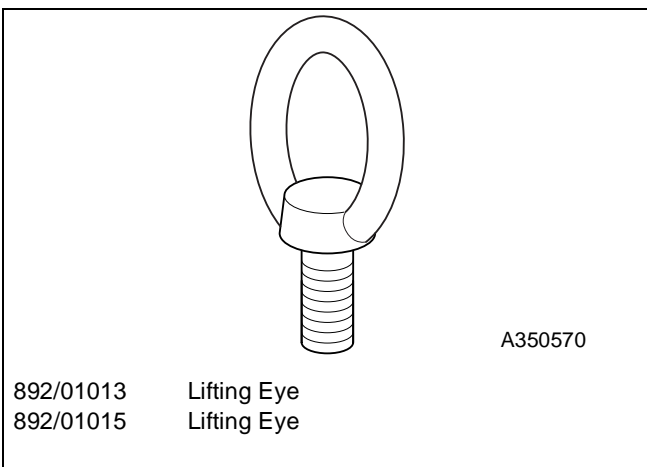
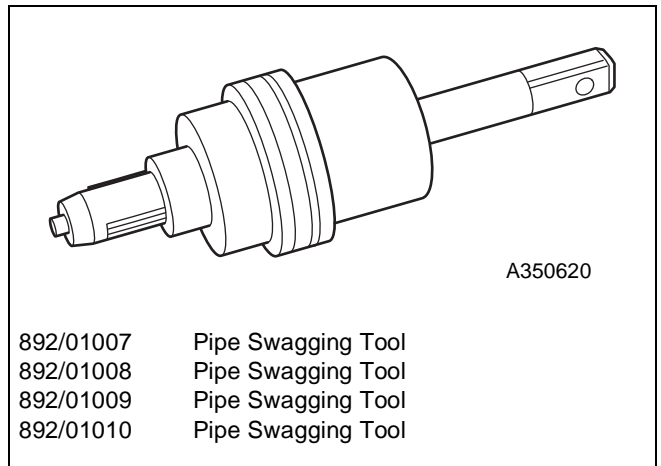
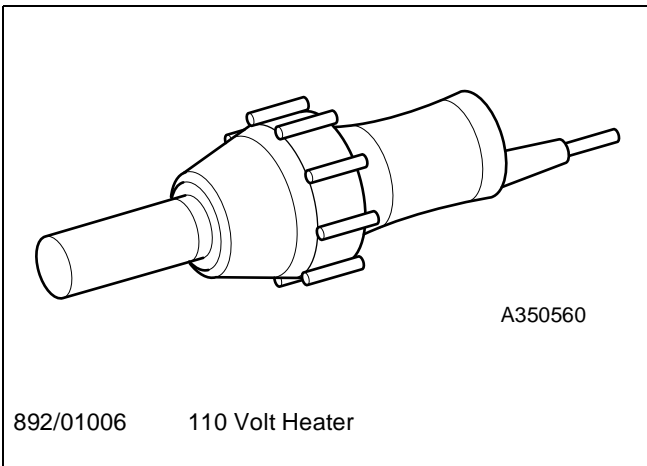
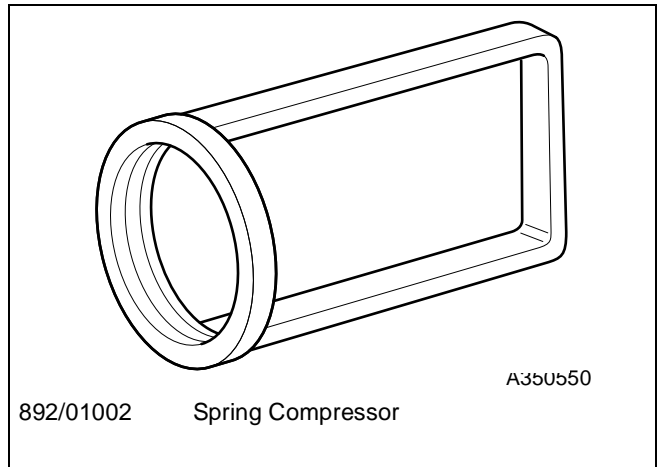
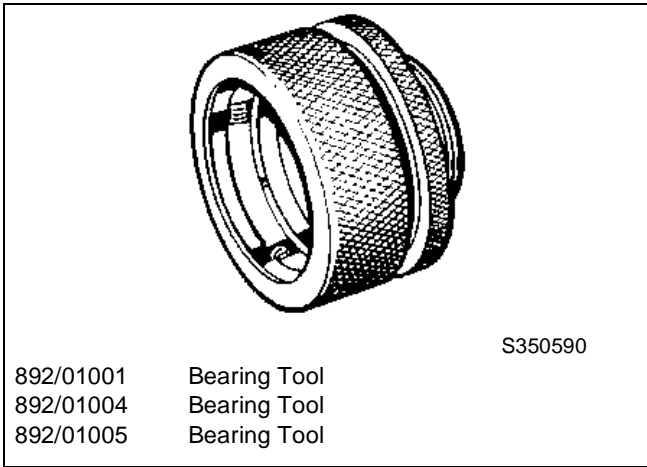
Service Tools (cont'd)

Section F - Transmission



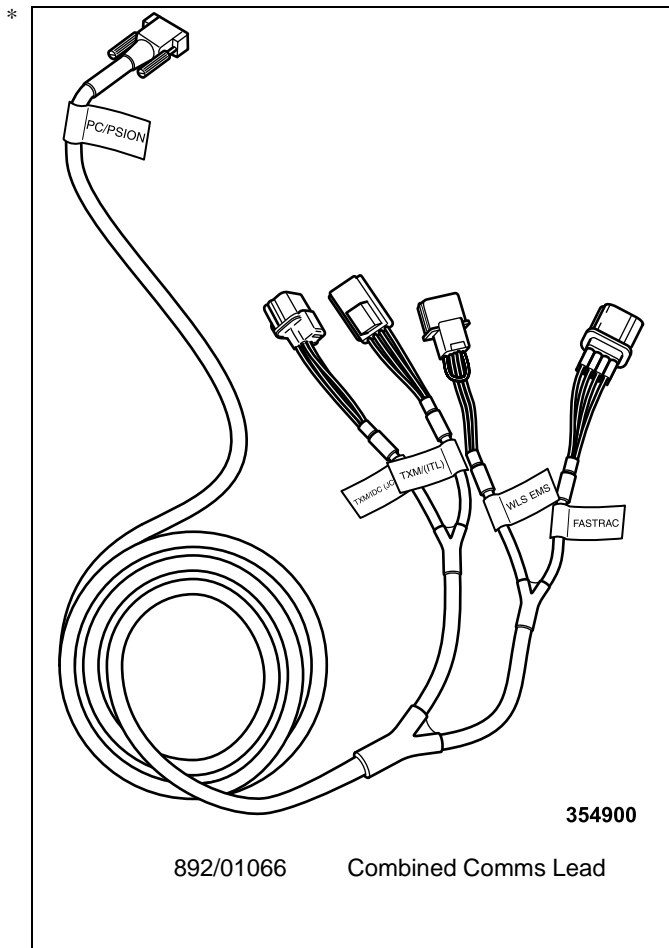
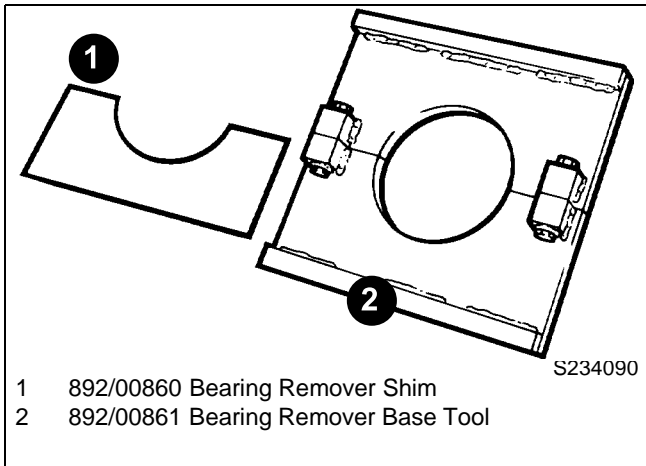
Service Tools (cont'd)

Section F - Transmission



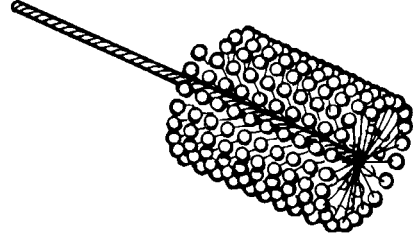
Service Tools (cont'd)

Section F - Transmission



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

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



S192390

For details of other engine service tools, refer to the Engine Service Manual, Publication No. 9806/1170

## Sealing and Retaining Compounds

<b>JCB Multi-Gasket</b>	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65mm diameter.	4102/1212	50 ml
<b>JCB Thread locker</b>	For threads of 50 mm diameter upwards, e.g. suction strainer	4101/0451	50 ml
<b>JCB Threadlocker (High Strength)</b>	A high strength locking fluid for use with threaded components. Gasketing for all sizes of flange where the strength of the joint is important	4102/0551	50 ml
<b>JCB Retainer (High Strength)</b>	For all retaining parts which are unlikely to be dismantled.	4101/0651	50 ml
<b>JCB Threadlocker and Sealer</b>	A medium strength locking fluid for sealing and retaining nuts, bolts and screws up to 50mm diameter, and for hydraulic fittings up to 25mm diameter.	4101/0250 4101/0251	10 ml 50 ml
<b>JCB Threadlocker and Sealer (High Strength)</b>	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.	4101/0550 4101/0552	10 ml 200 ml
<b>JCB Threadseal</b>	A medium strength thread sealing compound.	4102/1951	50 ml
<b>JCB Activator</b>	A cleaning primer which speeds the curing rate of anaerobic products	4104/0251 4104/0253	Aerosol (1 litre) Bottle (200 ml)
<b>JCB Cleaner/Degreaser</b>	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	Aerosol (400 ml)
<b>Anti Seize Paste</b>	A compound used for assembly and prevention of parts seizure	4003/0211	
<b>Direct Glazing Kit</b>	For one pane of glass; comprises items marked † below plus applicator nozzle etc.		
† <b>Ultra Fast Adhesive</b>	For direct glazing	4103/2109	310 ml
† <b>Active Wipe 205</b>	For direct glazing	4104/1203	250 g
† <b>Black Primer</b>	For direct glazing	4201/4906	30 ml
† <b>Clear Silicone Sealant</b>	To seal butt jointed glass	4102/0901	

## Towing - General

Do not tow a machine unless there is no alternative. Remember that further damage might be caused to the machine by towing it. If at all possible repair the machine where it stands. If the machine must be towed, read the following **CAUTION** and use the procedure given here.

### CAUTION

Towing a machine too far or too fast can damage the transmission. Do not tow the machine further than 10 km (6 miles). Use a trailer for greater distances. When towing do not travel faster than 10 kph (6 mph).

Use a rigid draw-bar. If you must use towing chains, then use two towing vehicles. One vehicle should be coupled to the front of disabled machine. The other towing vehicle should be coupled to the rear of disabled machine, to provide braking power.

The towing vehicle(s) must have enough pulling and braking power to move and stop the machine.

4-2-5-4

### Preparation for Towing

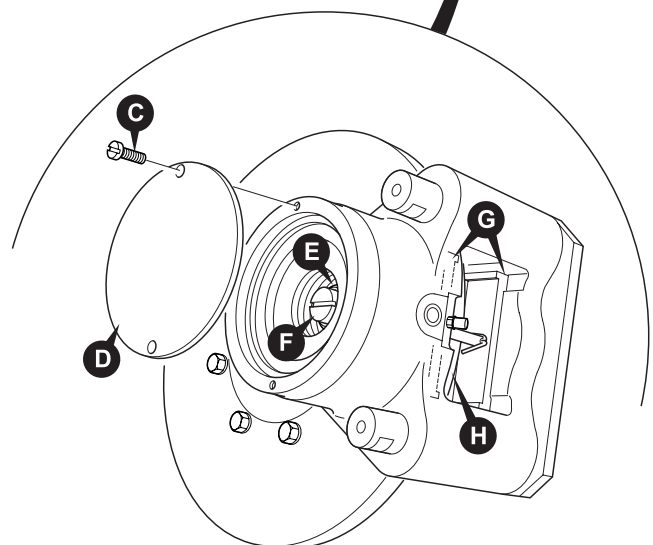
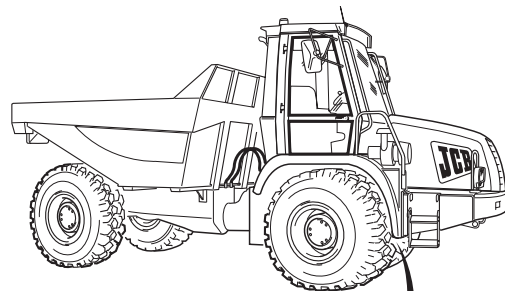
- 1 Put blocks at the front and rear of all four tyres to chock the wheels.
- 2 Attach the towing vehicle by the drawbar (or chain) to the front chassis towing point **A** (left or right). Refer to **Towing - General** for the towing point locations.
- \* 3 Attach the second towing vehicle by a chain to the rear towing point **B** (If using chains). Refer to **Towing - General** for the towing point locations.

### DANGER

Ensure that the blocks and towing vehicle will prevent the disabled machine from moving, as it is necessary to work under the machine to do this job. Note that this should be done by a qualified mechanic.

0023

- 4 Release the parking brake. If the disabled vehicle's engine is not running, release the parking brake manually as follows:
  - a Working under the front axle, remove the two screws **C** and remove the brake cover **D**.
  - b Release the locknut **E** (35 mm AF), and use a screwdriver to unscrew the centre pin **F** until clearance is seen between the brake pad and the brake disc.
  - c Tighten the locknut **E**.
  - d Put the brake cover **D** in position and locate it with the two screws **C**.



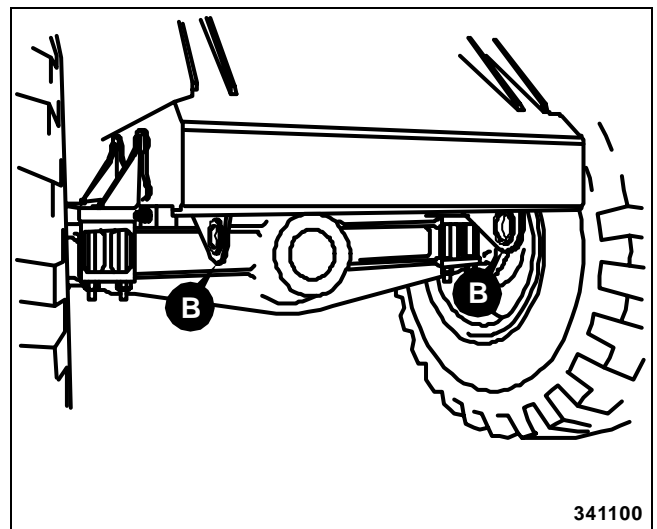
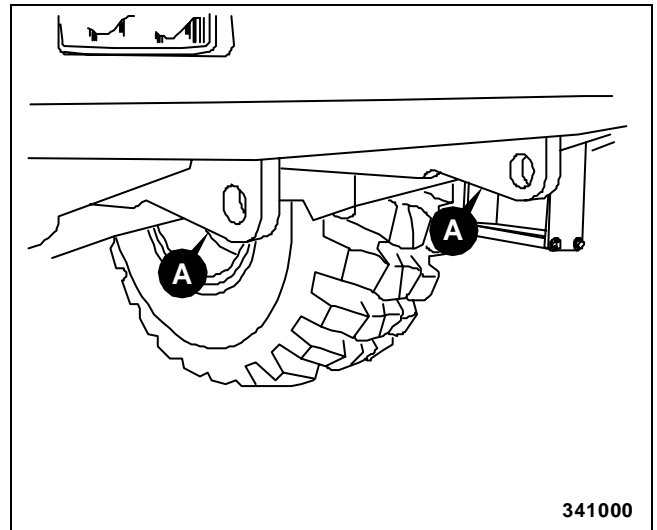
345280

**Preparation for towing (cont'd)**

- 5 Make sure the gear change lever is in the neutral position.
- 6 Make sure the transmission is in the two wheel drive mode.
- 7 If the engine and hydraulic systems are not damaged, put the tipper body in the fully lowered position.

**Note:** The procedure for doing this will depend on the machines' condition and its hydraulic circuits. For this reason, you should contact your JCB distributor for help and advice before attempting this work.

The machine is now ready for towing. Make sure you understand what the towing driver will be doing. Obey his instructions and all relevant regulations.



## Connecting/Disconnecting Hydraulic Hoses

The following paragraphs describe how to connect and disconnect hydraulic hoses safely.

### **⚠ WARNING**

**Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses or couplings, vent the pressure trapped in the hoses in accordance with the instructions given in this publication.**

HYD-1-5

### Venting Hydraulic Pressure

Stop the engine. When the engine has stopped, vent the hydraulic pressure as follows:

- a For the tipper body, operate the controls to release the trapped pressure.

### Connecting the Hoses

- 1 Connect the hoses. Where the connection is of the quick release type:
  - a Wipe the two faces of the male and female couplings and ensure that they are clean.
  - b Fit the male coupling into the female coupling. Make sure that the sleeve on the female coupling snaps into place.

For all other hose connections, use the correct tools and ensure that the connections are not cross-threaded. Support the weight of the hose until the connection is made. Do not exceed the recommended torque loading.

### **⚠ WARNING**

**Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not place your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.**

INT-3-1-10/1

Check for leaks as follows:

- a Start the engine.
- b Operate the controls to pressurise the required hose.
- c Switch off the engine. Remove the starter key. Check for signs of leakage at the hose connections.

### Disconnecting the Hoses

- 1 Vent the hydraulic pressure as described on this page.
- 2 Disconnect the hoses. Where the connection is of the quick release type:
  - a Remove any residual pressure trapped in the service line hoses.
  - b Pull back sleeve **C** to release the coupling.

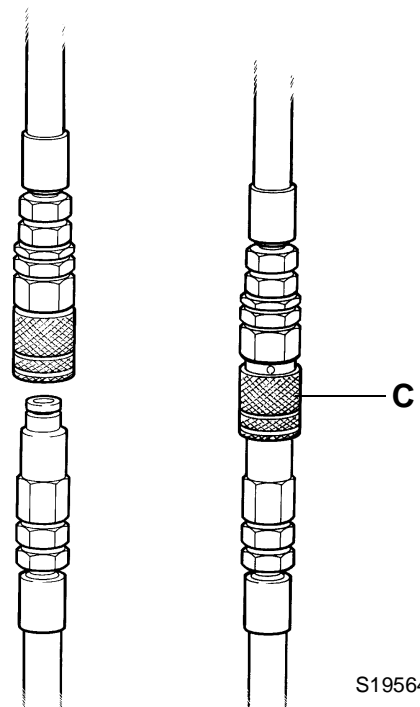
For all other hose connections, plug both sides of the connection to prevent loss of fluid.

### **⚠ WARNING**

**Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not place your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.**

INT-3-1-10/1

- 3 Check for leaks. See step 2 of **Connecting the Hoses**.





## Hydraulic Contamination

### Hydraulic Fluid Quality

Construction machinery uses a large volume of fluid in the hydraulic system for power transmission, equipment lubrication.

According to a survey conducted by a pump manufacturer, seventy percent of the causes of problems in hydraulic equipment were attributable to inadequate maintenance of the quality of the hydraulic fluid.

Therefore, it is obvious that control of the quality of the hydraulic fluid helps prevent hydraulic equipment problems and greatly improves safety and reliability. Furthermore from an economic angle it extends the life of the hydraulic fluid if quality is maintained.

### Effects of Contamination

Once inside the system, hydraulic fluid contaminants greatly affect the performance and life of hydraulic equipment. For example, contaminants in a hydraulic pump develop internal wear to cause internal leakage and hence lower discharges. Wear particles generated will circulate with the hydraulic fluid to cause further deterioration in the performance of other equipment.

Contaminants also enter principal sliding sections of the equipment causing temporary malfunction, scuffing, sticking and leakage and can lead to major problems.

The main contaminants can be classified as follows:

- 1 **Solid Particles** - sand, fibres, metallic particles, welding scale, sealing materials and wear particles etc.
- 2 **Liquid** - usually water and incompatible oils and greases.
- 3 **Gases** - Air, sulphur dioxide etc. which can create corrosive compounds if dissolved in the fluid.

These contaminants can appear during manufacture, assembly and operation.

### Cleaning Operation

The purpose of cleaning oil is to remove contaminants of all types and sludge by filtering hydraulic fluid through a cleaning unit, as illustrated, or similar.

### Procedure

Connect the cleaning unit in place of the hydraulic filter and run the system for sufficient time to pump all the hydraulic fluid through the unit. Disconnect the cleaning unit and reconnect the filter. Top up the system with clean hydraulic fluid as required.

### Contamination Standards

Dirt that damages your system is in many cases too small to be seen with the eye. The particle size is measured in microns.

1 micron = 0.001mm (0.0000394in)

Listed below are a few typical comparisons:

Red Blood Cell = 8 microns (0.008mm, 0.000315in)

Human Hair = 70 microns (0.07mm, 0.00275in)

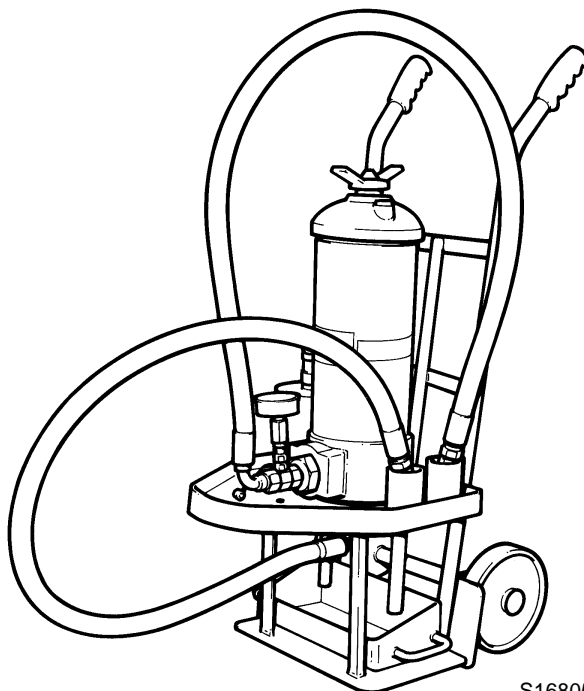
Grain of Salt = 100 microns (0.1mm, 0.00394in)

The smallest particle visible to the naked eye is 40 microns (0.04mm, 0.00157in) approximately.

Standards will often be quoted to ISO (International Standards Organisation) for which literature can be obtained.

### Filters

The filter assembly fitted to all product ranges is designed to filter all the contamination that is generated through use to the required level of cleanliness. It must be serviced to the requirements of the machine Service Schedules.



S168050

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Safety Notices	1 - 1
General Safety	2 - 1
Operating Safety	2 - 2
Maintenance Safety	2 - 4
Safety Decals	3 - 1

## Safety Notices

In this publication and on the machine there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

### **DANGER**

Denotes an extreme hazard exists. If proper precautions are not taken it is highly probable that the operator (or others) could be killed or seriously injured.

INT-1-2-1

### **WARNING**

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

INT-1-2-2

### **CAUTION**

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

INT-1-2-3



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