Service Manual

FASTRAC 1115, 1115S, 1125 & 1135

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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 the whole machine.

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

A = Optional Equipment
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.

Page cross references are generally made by presenting the subject title printed in bold, followed by the title of the section containing the subject. For example:

"**24** If the axle is still on the machine, fit the brake calipers (see **Brake Caliper Removal and Replacement**, Section G)."

Note: If only the subject title in bold is given, i.e. no section title, the cross reference is to another part of the same section.

Use the contents list at the beginning of each section to find the exact page number.

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 facing forwards.

Colour Coding

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

Blue: Neutral Circuit Pressure.

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

Pink: Pressure that is above Neutral Circuit Pressure but lower than that denoted by Red.

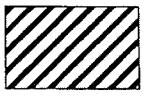
Green: Exhaust.

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

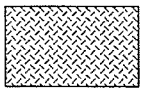
Yellow: Oil trapped within a chamber or line, preventing movement of components (lock-up).

Orange: Oil pressure used in a controlling device (servo).

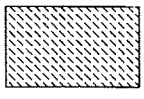
Black/White Coding



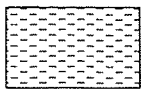
Neutral Circuit Pressure



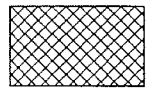
Pressure generated by the operation of a service. Depending on application this may be anything between Neutral Circuit Pressure and M.R.V. Operating Pressure.



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

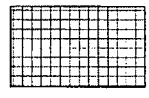


Exhaust.



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

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



Oil pressure used in a controlling device (servo).

A269290

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Page No.

* Machine Identification Plate

Each machine has an identification plate located on the front of the seat base. Vehicle Identification Number (VIN), and the serial numbers of the engine, gearboxes and axles are stamped on the plate.

Typical Vehicle Identification No. (VIN)

SLP HMV 11 3 30 736256
A B C D E F

A = Manufacturing Code
B = Machine Range
* **C** = Engine Code:
  11 = 1000 Series 1006-6LR (1115)
  12 = 1000 Series, Rating 1815/2400 (Earlier 1135)
  13 = New 1000 Series, Rating 1941/2300 (1115S)
  14 = New 1000 Series, Rating 1929/2300 (1125)
  15 = New 1000 Series, Rating 1947/2300 (Later 1135)
D = Transmission Speed Code:
  3 = 30 km/h
  4 = 40 km/h
  5 = 50 km/h
E = Vehicle Max. Speed Code:
  30 = 30 km/h
  40 = 40 km/h
  50 = 50 km/h
F = Sequential Serial Number

Typical Engine Identification Number

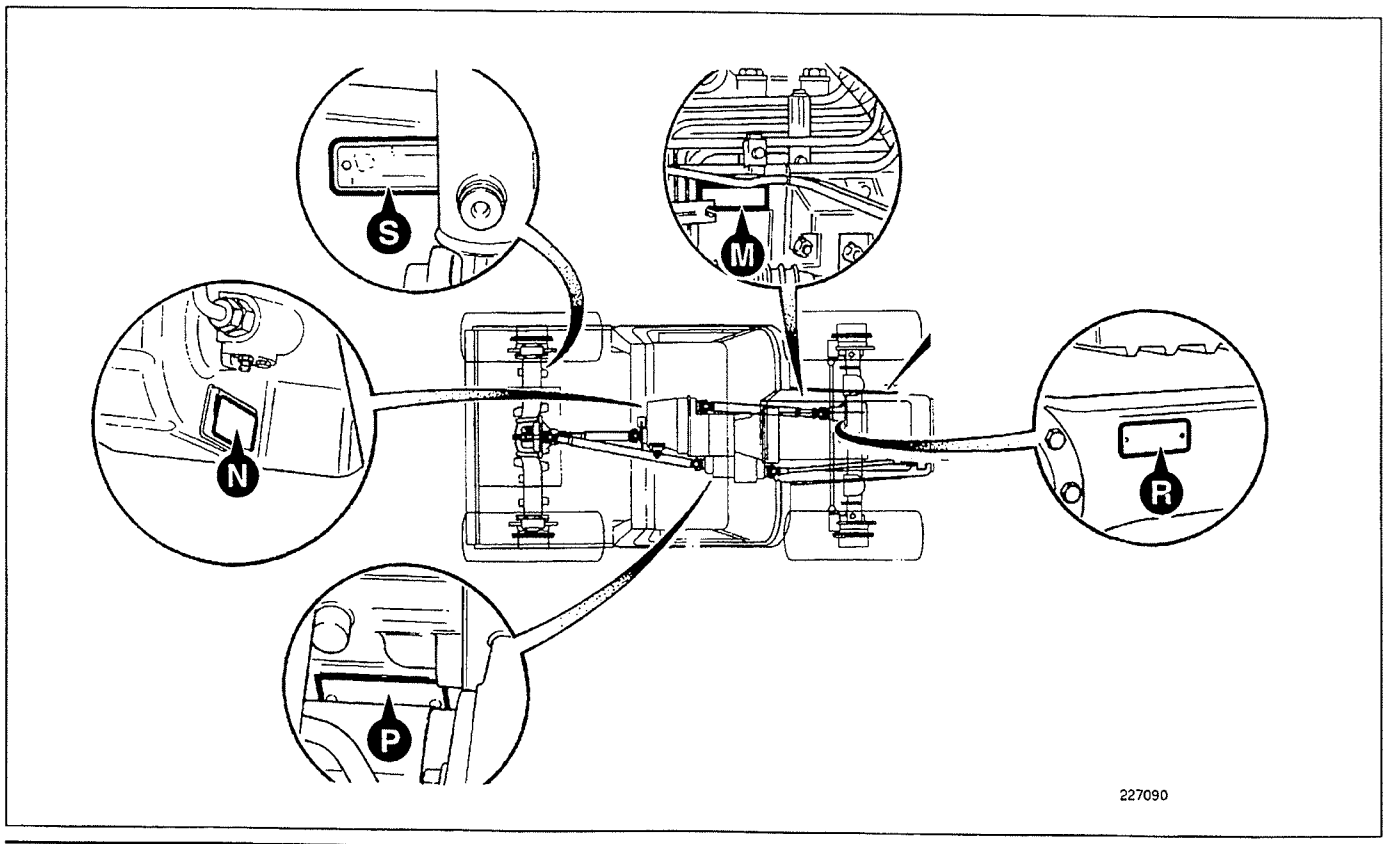
YA 50532 U 123456 X
G H J K L

* **G** = Engine Type:-
  YA = Normally Aspirated 1000 Series 6 cylinder
  YB = Turbocharged 1000 Series, 6 cylinder
  YH = Turbocharged New 1000 Series, 6 cylinder
H = Build List Number
(see **Engine Technical Data** for details)
J = Country of Origin
K = Engine Serial Number
L = Year of Manufacture

Unit Identification

The serial number of each major unit is also stamped on the unit itself as shown below. If a major unit is replaced by a new one, the serial number on the 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.

Engine	**M**
Transmission (Assembly of all three gearboxes)	**N**
Speed Gearbox	**P**
Front Axle	**R**
Rear Axle	**S**



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.

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

Metric Grade 8.8 Bolts

Bolt size Dia.	(mm)	Hexagon (A/F) mm	Torque Settings 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
M18	(18)	27	350	36	258
M20	(20)	30	476	48	352
M24	(24)	36	822	84	607
M30	(30)	46	1633	166	1205
M36	(36)	55	2854	291	2105

Metric - All Internal Hexagon Headed Cap Screws

Diameter mm	Torque Nm	kgf m	lbf ft
M3	2	0.2	1.5
M4	6	0.6	4.5
M5	11	1.1	8
M6	19	1.9	14
M8	46	4.7	34
M10	91	9.3	67
M12	159	16.2	117
M16	395	40	292
M18	550	56	406
M20	770	79	568
M24	1332	136	983

Hydraulic Hose to Adapter Connections

BSP Size (inches)	Torque Settings Nm	kgf m	lbf ft
1/8	14	1.4	10
1/4	24	2.5	18
3/8	33	3.3	24
1/2	44	4.8	35
5/8	58	6.0	43
3/4	84	8.6	62
1	115	11.8	85
1 1/2	244	24.9	180

Hydraulic Adapter into Component Connections with bonded washers

BSP Size (inches)	Torque Settings Nm	kgf m	lbf ft
1/8	20	2.1	15
1/4	34	3.4	25
3/8	75	7.6	55
1/2	102	10.3	75
5/8	122	12.4	90
3/4	183	18.7	135
1	203	20.7	150
1 1/2	305	31	225

Sealing and Retaining Compounds

JCB Multigasket	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	50ml
JCB Threadlocker	For threads of 50mm diameter upwards, eg. suction strainer.	4101/0451	50ml
JCB Threadlocker (High Strength)	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	50ml
JCB Retainer (High Strength)	For all retaining parts which are unlikely to be dismantled.	4101/0651	50ml
JCB Threadlocker And Sealer	A medium strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0250 4101/0251	10ml 50ml
JCB Threadlocker And Sealer (High Strength)	A high strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0550 4101/0552	10ml 200ml
JCB Threadseal	A medium strength thread sealing compound.	4102/1951	50ml
JCB Activator	A cleaning primer which speeds the curing rate of anaerobic products.	4104/0251 4104/0253	Aerosol (1 ltr) Bottle (200 ml)
JCB Cleaner/Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	Aerosol (400ml)
Direct Glazing Kit	For one pane of glass; comprises items marked † below plus applicator nozzle etc.		
† Ultra Fast Adhesive	For direct glazing	4103/2109	310 ml
† Active Wipe 205	For direct glazing	4104/1203	250 g
† Black Primer 206J	For direct glazing	4201/4906	30 ml
Clear Silicone Sealant	To seal butt jointed glass.	4102/0901	

Service Tools Numerical List

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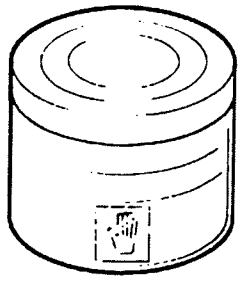
The following parts are replacement items for kits and would normally be included in the kit numbers above.

Replacement items for kit no. 892/00253

892/00201	Gauge 0 - 20 bar	7 - 1
892/00202	Gauge 0 - 40 bar	7 - 1
892/00203	Gauge 0 - 400 bar	7 - 1
892/00254	Hose	7 - 1

Service Tools

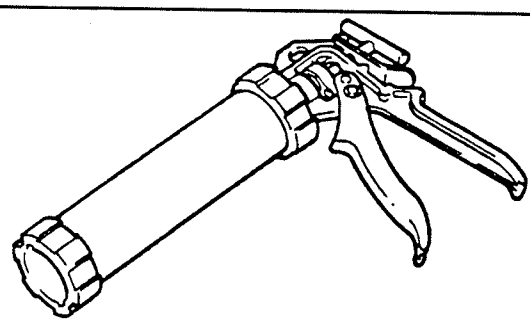
Section B - Body and Framework



S186240

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

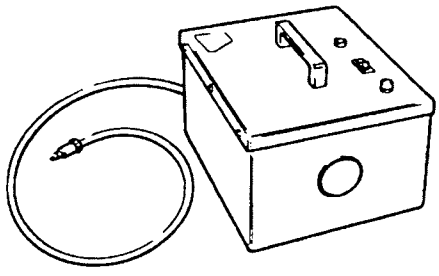
JCB part number - 4104/1310 (454g; 1lb tub)



S186270

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

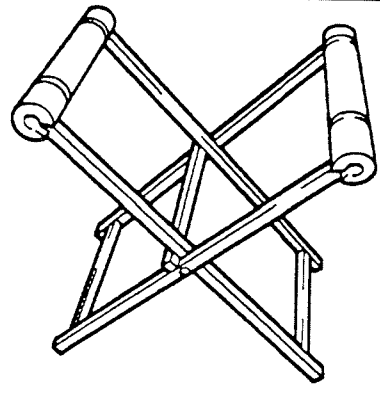
JCB part number - 892/00845



S186250

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).

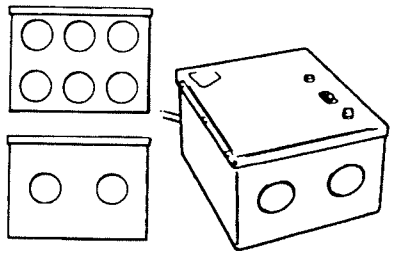
JCB part number - 992/12300



S186280

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

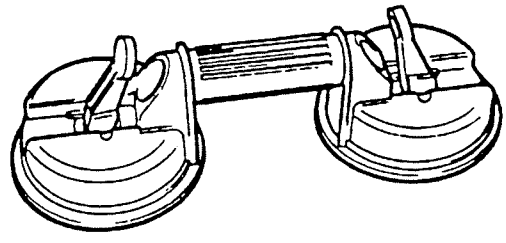
JCB part number - 892/00843



S186260

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



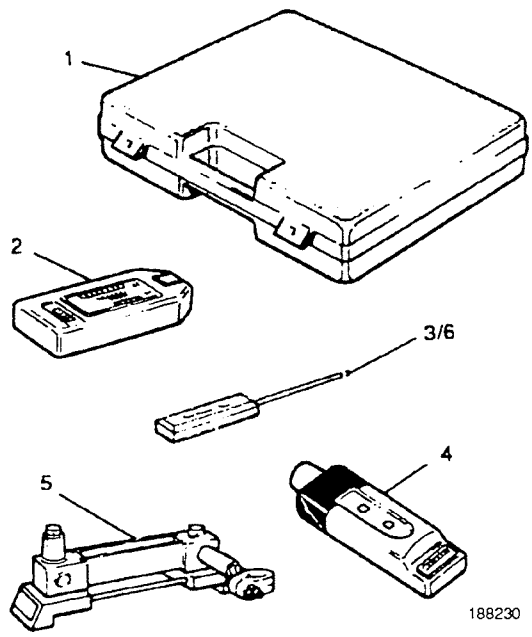
S186300

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

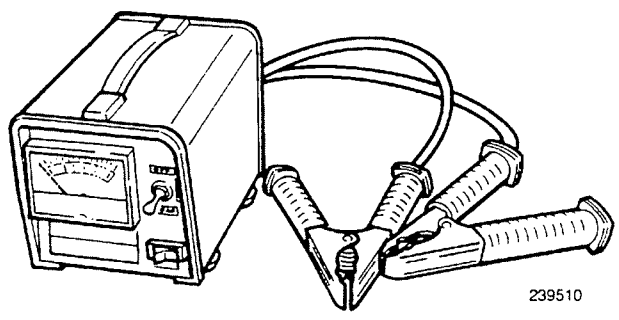
Service Tools

Section C - Electrics

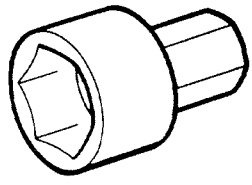


Electrical Test Equipment

1	892/00283	Tool Kit Case
2	892/00281	AVO Meter
3	892/00286	Surface Temperature Probe
4	892/00284	Microtach Digital Tachometer
5	892/00282	100 Amp Shunt - open type
6	892/00285	Hydraulic Oil Temperature Probe
7	892/00298	Fluke 85 Multimeter



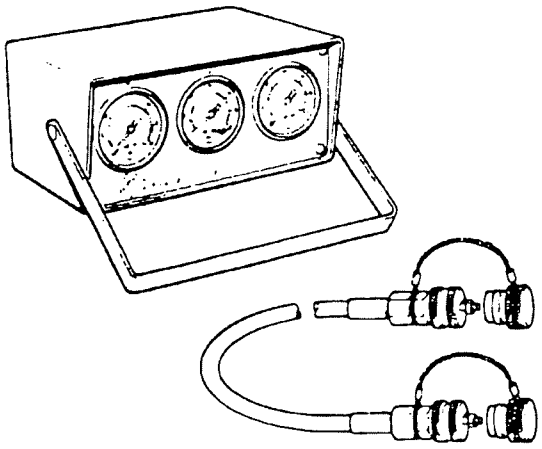
993/85700 Battery Tester



892/00882 Socket for Pulley Nut on Magneti Marelli Alternator.

Service Tools

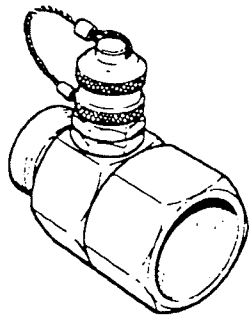
Section E - Hydraulics



Hydraulic Circuit Pressure Test Kit

892/00253	Pressure Test Kit
892/00201	Replacement Gauge 0-20 bar (0-300 lbf/in²)
892/00202	Replacement Gauge 0-40 bar (0-600 lbf/in²)
892/00203	Replacement Gauge 0-400 bar (0-6000 lbf/in²)
892/00254	Replacement Hose
:993/69800	Seal Kit for 892/00254 (can also be used with probe 892/00706)

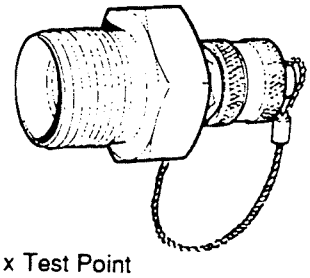
S188120



Pressure Test 'T' Adapters

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

S188130



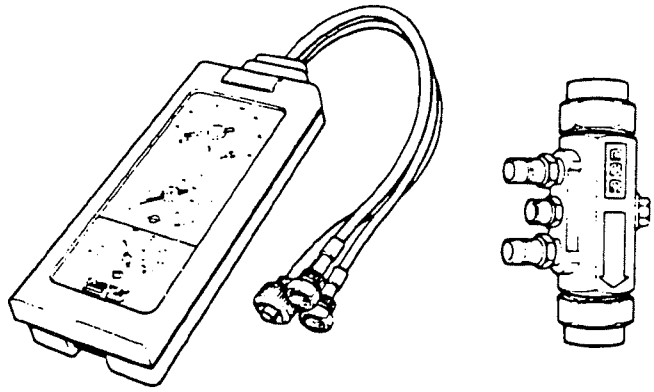
Pressure Test Adapters

892/00255	1/4 in BSP x Test Point
892/00256	3/8 in BSP x Test Point
892/00257	1/2 in BSP x Test Point
892/00258	5/8 in BSP x Test Point
816/15118	3/4 in BSP x Test Point
892/00259	1 in BSP x Test Point
892/00260	1.1/4 in BSP x Test Point
892/00261	5/8 in UNF x Test Point

S200140

Flow Test Equipment

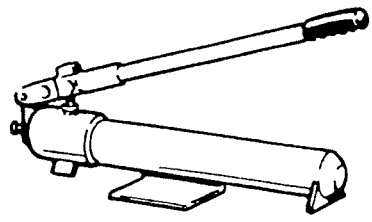
892/00268	Flow Monitoring Unit
892/00269	Sensor Head 0 - 100 l/min (0 - 22 UK gal/min)
892/00293	Connector Pipe
892/00270	Load Valve
1406/0021	Bonded Washer
1604/0006	Adapter 3/4 in M x 3/4 in M BSP
1612/0006	Adapter 3/4 in F x 3/4 in M BSP
892/00271	Adapter 3/4 in F x 5/8 in M BSP
892/00272	Adapter 5/8 in F x 3/4 in M BSP
816/20008	Adapter 3/4 in F x 1/2 in M BSP
892/00275	Adapter 1/2 in F x 3/4 in M BSP
892/00276	Adapter 3/4 in F x 3/8 in M BSP
892/00277	Adapter 3/8 in F x 3/4 in M BSP
892/00273	Sensor Head 0 - 380 l/min
892/00294	Connector Pipe
1606/0015	Adapter 1.1/4 in M BSP x 1 in M BSP
892/00078	Connector 1 in F x 1 in F BSP
1604/0008	Adapter 1 in M x 1 in M BSP
1606/0012	Adapter 1 in M x 3/4 in M BSP
816/20013	Adapter 3/4 in F x 1 in M BSP



S188150

Service Tools (continued)

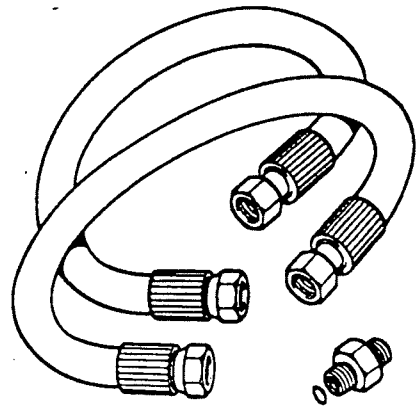
Section E - Hydraulics (continued)



S193850

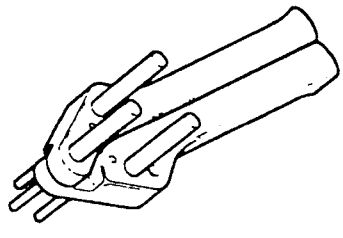
Hand Pump Equipment

892/00223	Hand Pump
892/00137	Micro-bore Hose 1/4 in BSP x 5 metres
892/00274	Adapter 1/4 in BSP male x 3/8 BSPT male
892/00262	Test Point on 1/4 in BSP male x 1/4 BSP female adapter
892/00706	Test Probe
892/00278	Gauge 0-40 bar (0-600 lbf/in²)
892/00279	Gauge 0-400 bar (0-6000 lbf/in²)



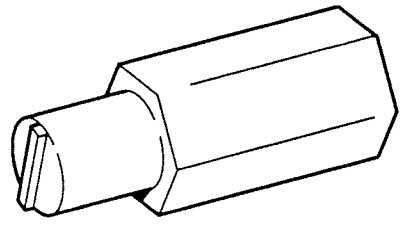
197210

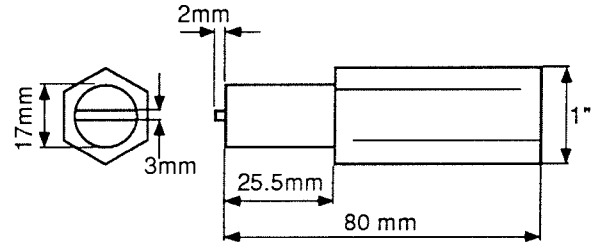
892/00318 Hose And Adapter Kit
To enable flow and pressure test equipment to be connected to adapters fitted with 'O' ring face seals.



197220

892/00334 Gland Seal Fitting Tool



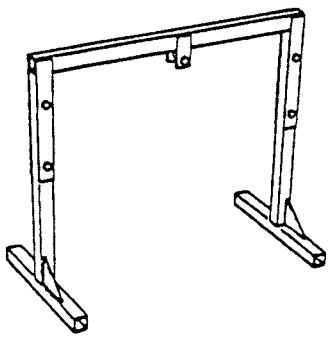


A234740

*Extractor Tool - Pump P1 Line Filter Retainer.
Manufacture locally.

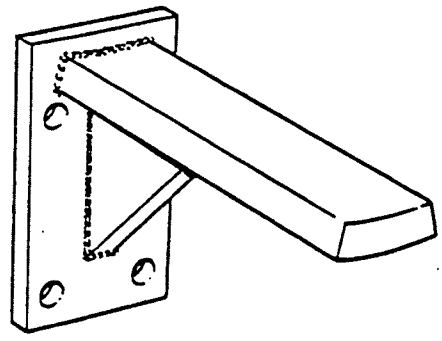
Service Tools

Section F - Transmission



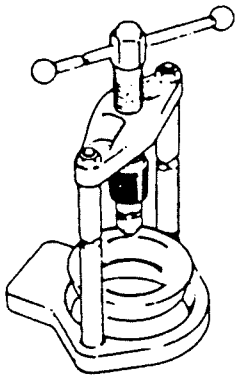
* 197260

892/00800 Splitting Frame (complete with ratchet hoist)



* 197270

892/00315 Engine Support Bracket

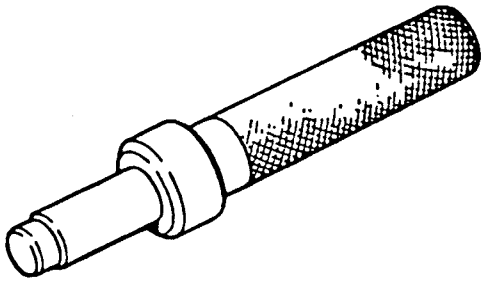


* 188200

892/00179 Bearing Press

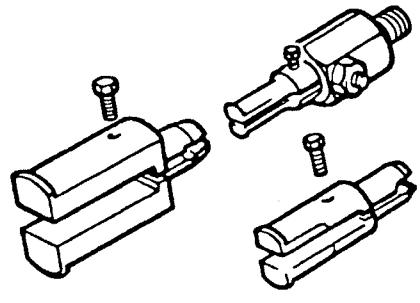
* 107750

892/00812 Drive Coupling Spanner for front and rear axle yoke couplings



* 197280

892/00313 Clutch Alignment Tool

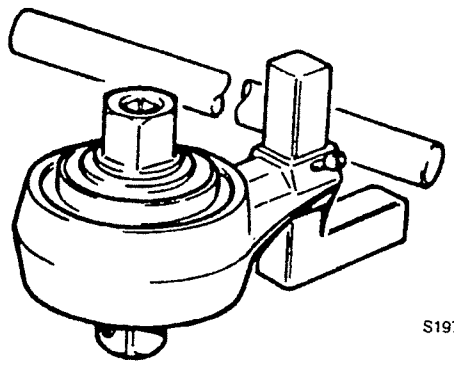


* 197080

892/00225 Adapter - Impulse Extractor
Small 17mm to 25mm
Medium 25mm to 45mm
Large 45mm to 80mm

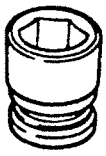
Service Tools (continued)

Section F - Transmission (continued)



S197030

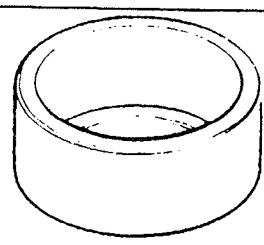
993/45400 Torque Multiplier
(use in conjunction with a torque wrench to give a 5 : 1 multiplication)



197250

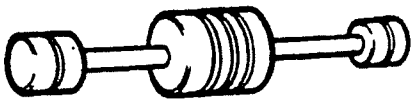
Heavy Duty Sockets

892/00817	17 mm A/F x 3/4in. square drive
892/00818	22 mm A/F x 3/4in. square drive
892/00819	15 mm A/F x 1/2in. square drive
892/00333	19 mm A/F x 3/4in. square drive



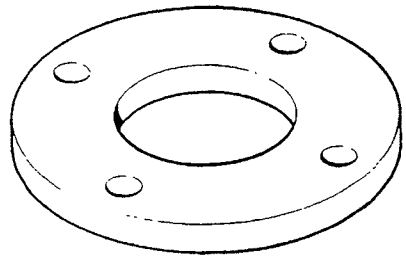
S190770

892/00174 Measuring Cup - Pinion Head Bearing



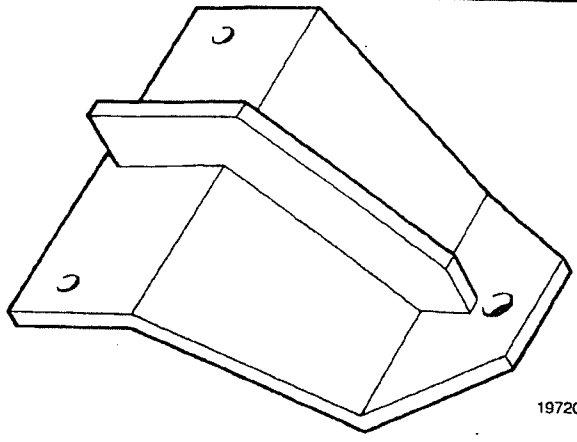
S197070

892/00224 Impulse Extractor Set for Hub Bearing Seals



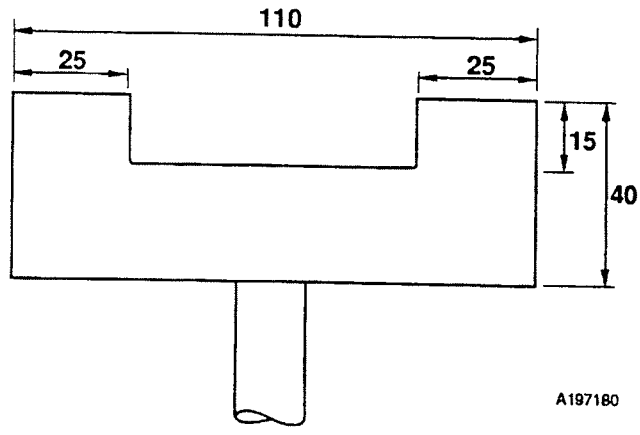
S197240

892/00312 Dummy End Plate for Range Gearbox



197200

477/00437 Gearbox Lifting Adapter

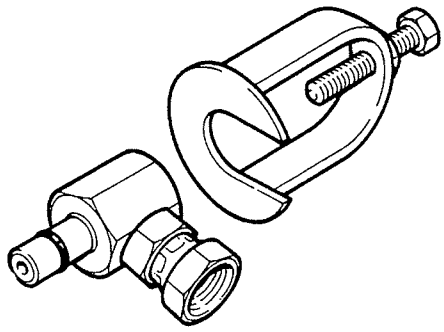


A197180

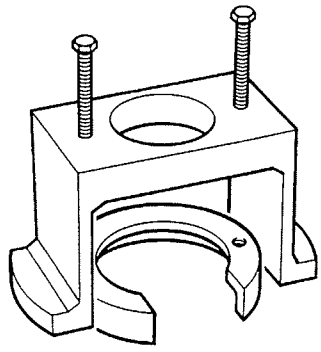
Rear Differential Setting Key
Cut from 5 mm plate to dimensions shown. Fabricate handle to suit.

Service Tools (continued)

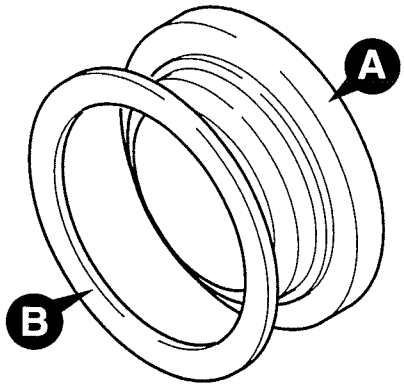
Section F - Transmission (continued)



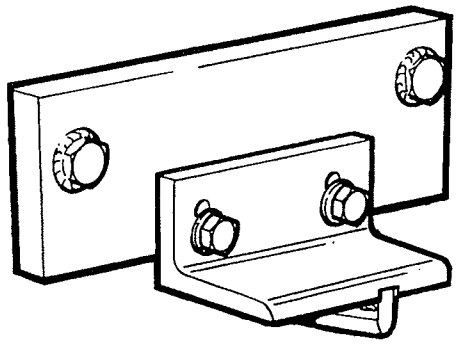
993/59300 2/4 WD Pressure Test Adaptor & Clamp



*892/00916 Spring Compressor for Splitter & PTO Clutches



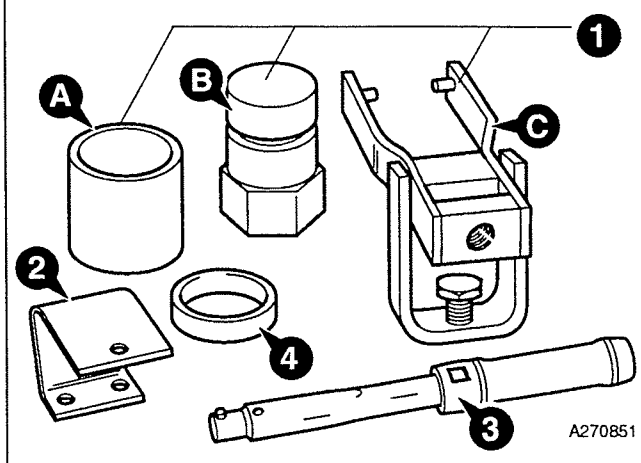
*234900 892/00891 Oil Seal Insertion Tool Assembly



892/00892 Speed Gearbox Locking Tool

Service Tools (continued)

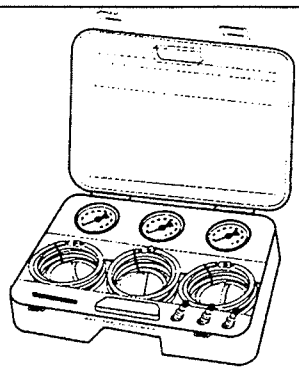
Section F - Transmission (continued)



***Solid Spacer Setting Tools**

1	892/00918		Setting Tool Kit. Contains the following:
		A	Sleeve for M24 Pinion
		B	Adapter for M30 Pinion
		C	Fork (suitable for all axles)
	The following setting tools must be purchased separately:		
	892/00945	**A**	Sleeve for M30 Pinion
	997/11100	**B**	Adapter for M24 Pinion
2	997/11000		Drive Head Setting Bracket
3	993/70111		Break-back Torque Wrench
4	-		Solid spacer (see parts CD or michrofiche for part numbers)

Section G - Brakes



892/00311 Brake Test Kit

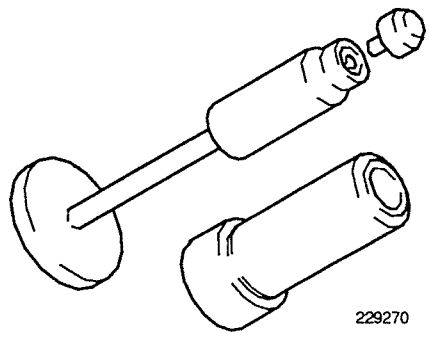
3 x Calibrated Test Gauges - 0-20 bar (0 - 290 lbf/in²)

3 x 5 Metre Hoses with Quick Release Adapters

3 x ISO Test Point Adapters

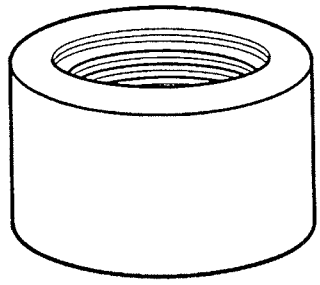
Service Tools (continued)

Section H - Steering



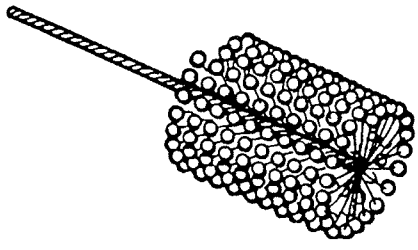
892/00180	Seal Tool for fitting 'O' ring and back-up ring to Danfoss Orbitrol Unit.
892/00181	Replacement Plastic Boss

Section S - Suspension



892/00314	Accumulator and Gas Spring Pressure Test Adapter

Section T - 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 relevant Engine Service Manual.

General

Do not tow a machine unless there is no alternative. Remember that more damage might be caused to the machine by towing it. If at all possible repair the machine where it stands.

Note: It is not possible to tow-start a machine fitted with JCB Powersplit.

Make sure you will be obeying all pertinent laws and regulations before towing the machine on public roads.

⚠ DANGER

If the engine is not running, there will not be enough pressure to apply the service brakes. Carefully follow the precautions on this page before moving the machine or there may be a serious accident.

13-2-4-4

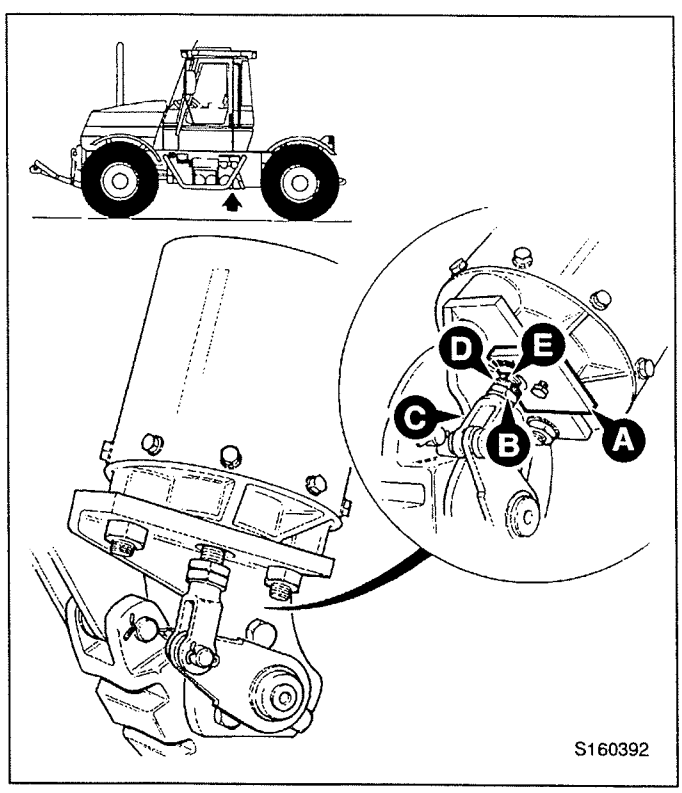
⚠ CAUTION

Towing a machine too far or too fast can damage the transmission. Do not tow the machine further than one mile. Use a trailer for greater distances. When towing do not travel faster than 25 km/h (15 mph).

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

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

2-2-7-3



* Preparation for Towing

1 **Connect the towing vehicle.**
- **a** Apply the parking brakes on the towing vehicle and securely chock the wheels on the Fastrac.
- **b** Fit the drawbar between towing vehicle and Fastrac.

2 **Prepare the machine.**
- **a** Make sure that the range and speed gearboxes are both in neutral.
- **b** If the gearbox has failed, disconnect both propshafts (see Section F).
- **c** If an axle has failed, remove the sun gears (see Section F).

3 **Release the Fastrac parking brake.**
- **a** Machines to Serial No. 737000
  Release the machine parking brake by means of the hand lever.
- **b** Machines from Serial No. 737001
  If there is not enough air pressure to release the brake, start the engine to charge up the air system. If the engine cannot be run but the brake air system is serviceable, charge the system to 120 psi (8 bar) through Schrader valve **X. This job must be done by a qualified mechanic, using the correct equipment.**

⚠ DANGER

Ensure that the chocks and towing vehicle will prevent the Fastrac from moving as it is necessary to work under the machine to release the parking brake. When the parking brake has been manually released as described below, it will be impossible to apply the brake until plate A has been removed.

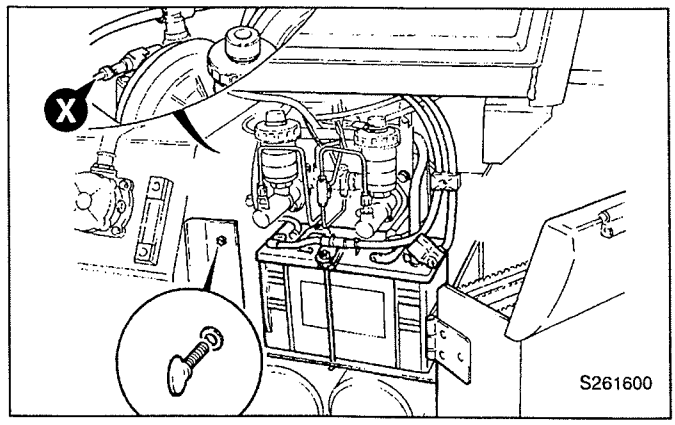
13-2-2-11

Alternatively, position plate **A** (if provided with the machine) as shown. Keeping nut **B** tight against clevis **C**, turn nut **D** against the plate so that rod **E** is drawn out of the actuator body and the parking brake is released.

Note: If the parking brake cannot be released, remove both propshafts (see Section F).

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

Remember that the steering will be much heavier if the engine is not running.



* Transporting the Machine

The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachments or parts that may move during transit must be adequately secured.
5-2-5-9

Note: Before transporting the machine make sure you will be obeying the rules and laws of all the areas that the machine will be carried through.

Make sure that the transporting vehicle is suitable. See **Static Dimensions** (SPECIFICATIONS section in the machine handbook) for the dimensions of the machine.

⚠ WARNING

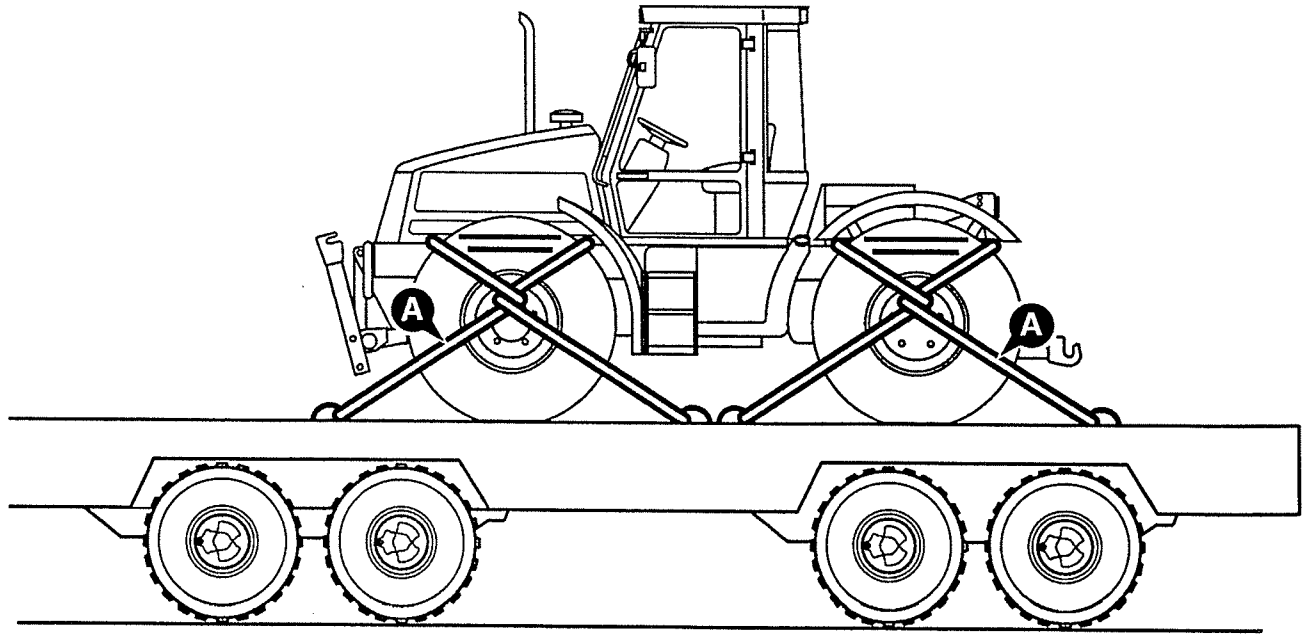
Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tyres. Make sure the machine will not foul on the ramp angle. See Static Dimensions in SPECIFICATIONS **section for the minimum ground clearance of your machine.**
2-2-7-5/1

1 Place blocks at the front and rear of the trailer wheels.

2 Move the machine on to the trailer as follows:
- **a** Make sure the ramps are correctly in place and secure.
- **b** Carefully drive the machine onto the trailer.
- **c** Set the drive to neutral and engage the parking brake.
- **d** Switch off the engine.
- **e** Ensure that the overall height of the load is within regulations.
- **f** Secure the cab.

3 Anchor the machine to the trailer with chains or suitable webbing straps. The preferred fixing is to use webbing straps individually fixing all four wheels to the deck of the trailer as at **A**. If chains are used they should be connected to a suitable part of the drawbar at the rear of the machine. At the front, use the tie down points. Avoid chaining any part of the machine where the chains may damage critical componentry. For example, chaining around either axle provides the possibility of damaging the steel brake pipes running along their length.

4 Measure the maximum height of the machine from the ground. Try to make sure the truck driver knows the clearance height before he drives away.



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