# Service Manual

# JS115,JS130,JS145 - Tier III Auto

**Service Manual - JS115,JS130,JS145 - Tier III Auto**


Publication No.
**9803/9860-4**



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

World Class
Customer Support

**Notes:**

# Section 1

# General Information

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# Introduction

## About this Manual

### Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

JCB JS115 from serial number 1703500 to 1703599.

JCB JS115 from serial number 1777500 to 1777999.

JCB JS130 from serial number 1535000 to 1535999.

JCB JS145 from serial number 1600011 to 1600999.

### Using the Service Manual

T11-004

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.

The illustrations in this publication are for guidance only. Where the machines differ, the text and/or the illustration will specify.

General warnings in Section 2 are repeated throughout the manual, as well as specific warnings. Read all safety statements regularly, so you do not forget them.

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.

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.

The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this publication.

Finally, please remember above all else safety must come first!

### Section Numbering

T11-005

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 and Safety - includes warnings and cautions pertinent to aspects of workshop procedures etc.

**3** 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:

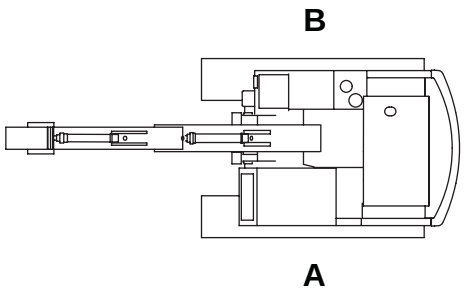
**A** Attachments

**B** Body and Framework, etc.

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

## Left Side, Right Side

In this manual, 'left' **A** and 'right' **B** mean your left and right when you are seated correctly in the machine.




C017280

**Fig 1.**

## Cross References

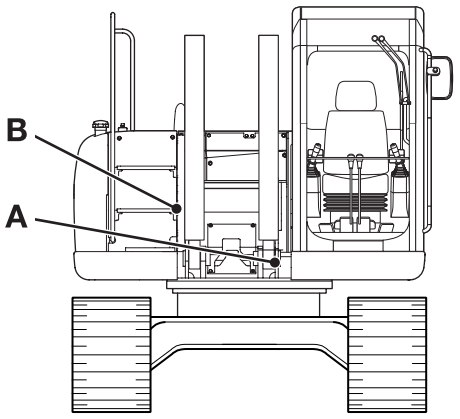
T1-004_2

In this publication, page cross references are made by presenting the subject title printed in bold, italic and underlined. It is preceeded by the 'go to' symbol. The number of the page upon which the subject begins, is indicated within the brackets. For example: ***Cross References ( 1-2)***.

# Identifying Your Machine

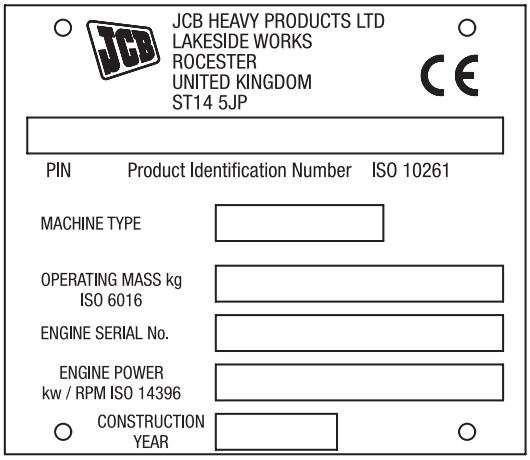
## Machine Identification Plate

Your machine has a data plate, located on the outside the cab as shown at **A**. The machine serial number is inscribed at **B** which is the base plate of the rear frame.




T103401

**Fig 2.**




732821

**Fig 3.**

### Typical Product Identification Number (PIN)

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| JCB | JS11D | C | 01421200 |

**1** World Manufacturer Identification (JCB)

**2** Machine Type and Model (JS11D= JS115)

**3** Randomly Generated Check Letter.

**4** Machine Serial Number (01421200)

### Typical Engine Identification Number

If the engine is replaced by a new one, the data plate serial number will be wrong. Either stamp the new number on the plate or stamp out the old one. This will prevent the wrong number being quoted when you order replacement parts.

The engine number is at **A**.

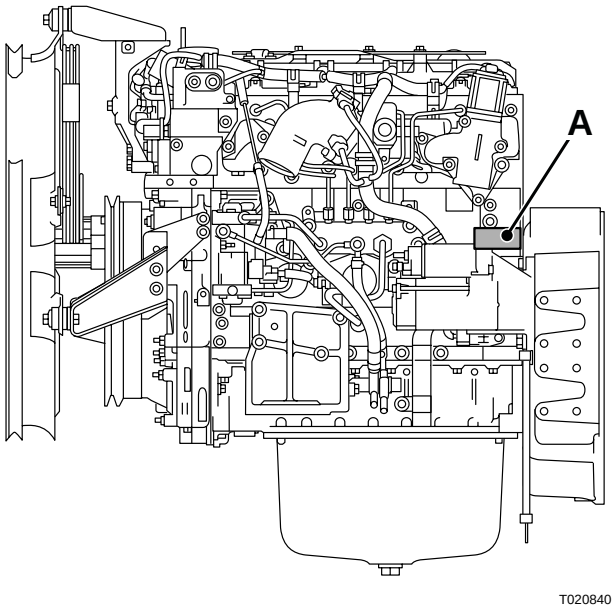



**Fig 4. 4JJ**

| a | b |
|---|---|
| 4JJ | 578550 |

**a** Engine Type

**b** Engine Serial Number

# Torque Settings

## Zinc Plated Fasteners and Dacromet Fasteners

T11-002

### Introduction

Some external fasteners on JCB machines are manufactured using an improved type of corrosion resistant finish. This type of finish is called Dacromet and replaces the original Zinc and Yellow Plating used on earlier machines.

The two types of fasteners can be readily identified by colour and part number suffix. ⇒ ***Table 1. Fastener Types (1-5)***.

**Table 1. Fastener Types**

| Fastener Type | Colour | Part No. Suffix |
|---|---|---|
| Zinc and Yellow | Golden finish | 'Z' (e.g. 1315/3712Z) |
| Dacromet | Mottled silver finish | 'D' (e.g. 1315/3712D) |

***Note:*** *As the Dacromet fasteners have a lower torque setting than the Zinc and Yellow fasteners, the torque figures used must be relevant to the type of fastener.*

***Note:*** *A Dacromet bolt should not be used in conjunction with a Zinc or Yellow plated nut, as this could change the torque characteristics of the torque setting further. For the same reason, a Dacromet nut should not be used with a Zinc or Yellow plated bolt.*

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

***Note:*** *Dacromet bolts, due to their high corrosion resistance are used in areas where rust could occur. Dacromet bolts are only used for external applications. They are not used in applications such as gearbox or engine joint seams or internal applications.*

### Bolts and Screws

Use the following torque setting tables only where no torque setting is specified in the text.

***Note:*** *Dacromet fasteners are lubricated as part of the plating process, do not lubricate.*

Torque settings are given for the following conditions:

#### Condition 1

- Un-lubricated fasteners
- Zinc fasteners
- Yellow plated fasteners

#### Condition 2

- Zinc flake (Dacromet) fasteners
- Lubricated zinc and yellow plated fasteners
- Where there is a natural lubrication. For example, cast iron components

#### Verbus Ripp Bolts

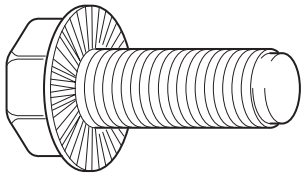


**Fig 1.**

Torque settings for these bolts are determined by the application. Refer to the relevant procedure for the required settings.

Zinc Plated Fasteners and Dacromet Fasteners

**Table 2. Torque Settings - UNF Grade 'S' Fasteners**

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|---|---|---|---|---|---|---|---|---|
| in. | mm | in. | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| 1/4 | 6.3 | 7/16 | 11.2 | 1.1 | 8.3 | 10.0 | 1.0 | 7.4 |
| 5/16 | 7.9 | 1/2 | 22.3 | 2.3 | 16.4 | 20.0 | 2.0 | 14.7 |
| 3/8 | 9.5 | 9/16 | 40.0 | 4.1 | 29.5 | 36.0 | 3.7 | 26.5 |
| 7/16 | 11.1 | 5/8 | 64.0 | 6.5 | 47.2 | 57.0 | 5.8 | 42.0 |
| 1/2 | 12.7 | 3/4 | 98.00 | 10.0 | 72.3 | 88.0 | 9.0 | 64.9 |
| 9/16 | 14.3 | 13/16 | 140.0 | 14.3 | 103.2 | 126.0 | 12.8 | 92.9 |
| 5/8 | 15.9 | 15/16 | 196.0 | 20.0 | 144.6 | 177.0 | 18.0 | 130.5 |
| 3/4 | 19.0 | 1 1/8 | 343.0 | 35.0 | 253.0 | 309.0 | 31.5 | 227.9 |
| 7/8 | 22.2 | 1 15/16 | 547.0 | 55.8 | 403.4 | 492.0 | 50.2 | 362.9 |
| 1 | 25.4 | 1 1/2 | 814.0 | 83.0 | 600.4 | 732.0 | 74.6 | 539.9 |
| 1 1/8 | 31.7 | 1 7/8 | 1181.0 | 120.4 | 871.1 | 1063.0 | 108.4 | 784.0 |
| 1 1/4 | 38.1 | 2 1/4 | 1646.0 | 167.8 | 1214.0 | 1481.0 | 151.0 | 1092.3 |

**Table 3. Torque Settings - Metric Grade 8.8 Fasteners**

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|---|---|---|---|---|---|---|---|---|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 5.8 | 0.6 | 4.3 | 5.2 | 0.5 | 3.8 |
| M6 | 6 | 10 | 9.9 | 1.0 | 7.3 | 9.0 | 0.9 | 6.6 |
| M8 | 8 | 13 | 24.0 | 2.4 | 17.7 | 22.0 | 2.2 | 16.2 |
| M10 | 10 | 17 | 47.0 | 4.8 | 34.7 | 43.0 | 4.4 | 31.7 |
| M12 | 12 | 19 | 83.0 | 8.5 | 61.2 | 74.0 | 7.5 | 54.6 |
| M16 | 16 | 24 | 205.0 | 20.9 | 151.2 | 184.0 | 18.8 | 135.7 |
| M20 | 20 | 30 | 400.0 | 40.8 | 295.0 | 360.0 | 36.7 | 265.5 |
| M24 | 24 | 36 | 690.0 | 70.4 | 508.9 | 621.0 | 63.3 | 458.0 |
| M30 | 30 | 46 | 1372.0 | 139.9 | 1011.9 | 1235.0 | 125.9 | 910.9 |
| M36 | 36 | 55 | 2399.0 | 244.6 | 1769.4 | 2159.0 | 220.0 | 1592.4 |

Zinc Plated Fasteners and Dacromet Fasteners

**Table 4. Metric Grade 10.9 Fasteners**

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|---|---|---|---|---|---|---|---|---|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 8.1 | 0.8 | 6.0 | 7.3 | 0.7 | 5.4 |
| M6 | 6 | 10 | 13.9 | 1.4 | 10.2 | 12.5 | 1.3 | 9.2 |
| M8 | 8 | 13 | 34.0 | 3.5 | 25.0 | 30.0 | 3.0 | 22.1 |
| M10 | 10 | 17 | 67.0 | 6.8 | 49.4 | 60.0 | 6.1 | 44.2 |
| M12 | 12 | 19 | 116.0 | 11.8 | 85.5 | 104.0 | 10.6 | 76.7 |
| M16 | 16 | 24 | 288.0 | 29.4 | 212.4 | 259.0 | 26.4 | 191.0 |
| M20 | 20 | 30 | 562.0 | 57.3 | 414.5 | 506.0 | 51.6 | 373.2 |
| M24 | 24 | 36 | 971.0 | 99.0 | 716.9 | 874.0 | 89.1 | 644.6 |
| M30 | 30 | 46 | 1930.0 | 196.8 | 1423.5 | 1737.0 | 177.1 | 1281.1 |
| M36 | 36 | 55 | 3374.0 | 344.0 | 2488.5 | 3036.0 | 309.6 | 2239.2 |

**Table 5. Metric Grade 12.9 Fasteners**

| Bolt Size | | Hexagon (A/F) | Condition 1 | | | Condition 2 | | |
|---|---|---|---|---|---|---|---|---|
| ISO Metric Thread | mm | mm | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M5 | 5 | 8 | 9.8 | 1.0 | 7.2 | 8.8 | 0.9 | 6.5 |
| M6 | 6 | 10 | 16.6 | 1.7 | 12.2 | 15.0 | 1.5 | 11.1 |
| M8 | 8 | 13 | 40.0 | 4.1 | 29.5 | 36.0 | 3.7 | 26.5 |
| M10 | 10 | 17 | 80.0 | 8.1 | 59.0 | 72.0 | 7.3 | 53.1 |
| M12 | 12 | 19 | 139.0 | 14.2 | 102.5 | 125.0 | 12.7 | 92.2 |
| M16 | 16 | 24 | 345.0 | 35.2 | 254.4 | 311.0 | 31.7 | 229.4 |
| M20 | 20 | 30 | 674.0 | 68.7 | 497.1 | 607.0 | 61.9 | 447.7 |
| M24 | 24 | 36 | 1165.0 | 118.8 | 859.2 | 1048.0 | 106.9 | 773.0 |
| M30 | 30 | 46 | 2316.0 | 236.2 | 1708.2 | 2084.0 | 212.5 | 1537.1 |
| M36 | 36 | 55 | 4049.0 | 412.9 | 2986.4 | 3644.0 | 371.6 | 2687.7 |

**Table 6. Torque Settings - Rivet Nut Bolts/Screws**

| Bolt Size | | | | |
|---|---|---|---|---|
| ISO Metric Thread | mm | Nm | kgf m | lbf ft |
| M3 | 3 | 1.2 | 0.1 | 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 |

**Table 7. Torque Settings - Internal Hexagon Headed Cap Screws (Zinc)**

| Bolt Size | | | |
|---|---|---|---|
| ISO Metric Thread | Nm | kgf m | lbf ft |
| M3 | 2.0 | 0.2 | 1.5 |
| M4 | 6.0 | 0.6 | 4.5 |
| M5 | 11.0 | 1.1 | 8.0 |
| M6 | 19.0 | 1.9 | 14.0 |
| M8 | 46.0 | 4.7 | 34.0 |
| M10 | 91.0 | 9.3 | 67.0 |
| M12 | 159.0 | 16.2 | 117.0 |
| M16 | 395.0 | 40.0 | 292.0 |
| M18 | 550.0 | 56.0 | 406.0 |
| M20 | 770.0 | 79.0 | 568.0 |
| M24 | 1332.0 | 136.0 | 983.0 |

# Hydraulic Connections

T11-003

## 'O' Ring Face Seal System

### Adaptors Screwed into Valve Blocks

Adaptor screwed into valve blocks, seal onto an 'O' ring which is compressed into a 45° seat machined into the face of the tapped port.

**Table 8. Torque Settings - BSP Adaptors**

| BSP Adaptor Size | Hexagon (A/F) | | | |
|---|---|---|---|---|
| in. | mm | Nm | kgf m | lbf ft |
| 1/4 | 19.0 | 18.0 | 1.8 | 13.0 |
| 3/8 | 22.0 | 31.0 | 3.2 | 23.0 |
| 1/2 | 27.0 | 49.0 | 5.0 | 36.0 |
| 5/8 | 30.0 | 60.0 | 6.1 | 44.0 |
| 3/4 | 32.0 | 81.0 | 8.2 | 60.0 |
| 1 | 38.0 | 129.0 | 13.1 | 95.0 |
| 1 1/4 | 50.0 | 206.0 | 21.0 | 152.0 |

**Table 9. Torque Settings - SAE Connections**

| SAE Tube Size | SAE Port Thread Size | Hexagon (A/F) | | | |
|---|---|---|---|---|---|
| | | mm | Nm | kgf m | lbf ft |
| 4 | 7/16 - 20 | 15.9 | 20.0 - 28.0 | 2.0 - 2.8 | 16.5 - 18.5 |
| 6 | 9/16 - 18 | 19.1 | 46.0 - 54.0 | 4.7 - 5.5 | 34.0 - 40.0 |
| 8 | 3/4 - 16 | 22.2 | 95.0 - 105.0 | 9.7 - 10.7 | 69.0 - 77.0 |
| 10 | 7/8 - 14 | 27.0 | 130.0 - 140.0 | 13.2 - 14.3 | 96.0 - 104.0 |
| 12 | 1 1/16 - 12 | 31.8 | 190.0 - 210.0 | 19.4 - 21.4 | 141.0 - 155.0 |
| 16 | 1 5/16 - 12 | 38.1 | 290.0 - 310.0 | 29.6 - 31.6 | 216.0 - 230.0 |
| 20 | 1 5/8 | 47.6 | 280.0 - 380.0 | 28.5 - 38.7 | 210.0 - 280.0 |

### Hoses Screwed into Adaptors

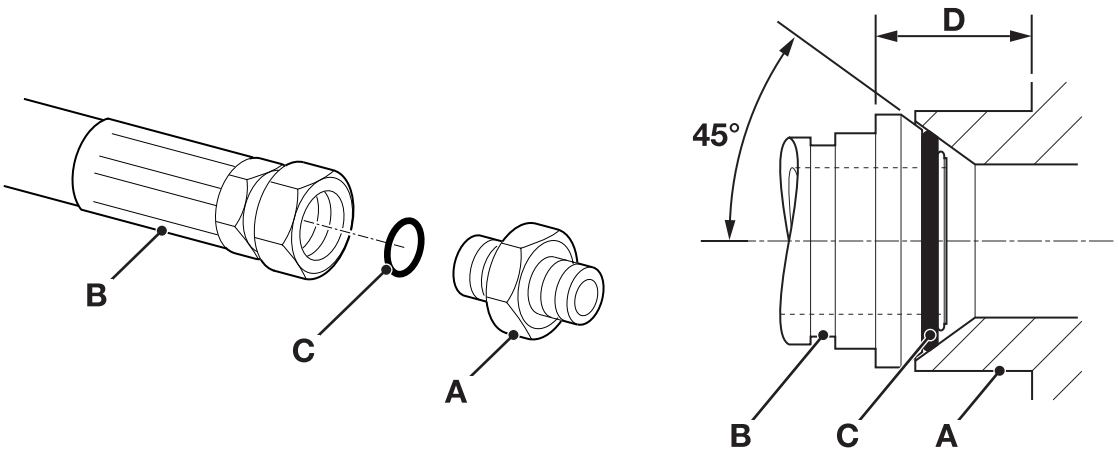



**Fig 2.**

Hoses **2-B** screwed into adaptors **2-A** seal onto an `O' ring **2-C** which is compressed into a 45° seat machined into the face of the adaptor port.

***Note:*** *Dimension **2-D** will vary depending upon the torque applied.*

**Table 10. BSP Hose - Torque Settings**

| BSP Hose Size | Hexagon (A/F) | | | |
|---|---|---|---|---|
| in. | mm | Nm | kgf m | lbf ft |
| 1/8 | 14.0 | 14.0 - 16.00 | 1.4 - 1.6 | 10.3 - 11.8 |
| 1/4 | 19.0 | 24.0 - 27.0 | 2.4 - 2.7 | 17.7 - 19.9 |
| 3/8 | 22.0 | 33.0 - 40.0 | 3.4 - 4.1 | 24.3 - 29.5 |
| 1/2 | 27.0 | 44.0 - 50.0 | 4.5 - 5.1 | 32.4 - 36.9 |
| 5/8 | 30.0 | 58.0 - 65.0 | 5.9 - 6.6 | 42.8 - 47.9 |
| 3/4 | 32.0 | 84.0 - 92.0 | 8.6 - 9.4 | 61.9 - 67.8 |
| 1 | 38.0 | 115.0 - 126.0 | 11.7 - 12.8 | 84.8 - 92.9 |
| 1 1/4 | 50.0 | 189.0 - 200.0 | 19.3 - 20.4 | 139.4 - 147.5 |
| 1 1/2 | 55.0 | 244.0 - 260.0 | 24.9 - 26.5 | 180.0 - 191.8 |

### Adaptors into Component Connections with Bonded Washers

**Table 11. BSP Adaptors with Bonded Washers - Torque Settings**

| BSP Size | | | |
|---|---|---|---|
| in. | Nm | kgf m | lbf ft |
| 1/8 | 20.0 | 2.1 | 15.0 |
| 1/4 | 34.0 | 3.4 | 25.0 |
| 3/8 | 75.0 | 7.6 | 55.0 |
| 1/2 | 102.0 | 10.3 | 75.0 |
| 5/8 | 122.0 | 12.4 | 90.0 |
| 3/4 | 183.0 | 18.7 | 135.0 |
| 1 | 203.0 | 20.7 | 150.0 |
| 1 1/4 | 305.0 | 31.0 | 225.0 |
| 1 1/2 | 305.0 | 31.0 | 225.0 |

## 'Torque Stop' Hose System

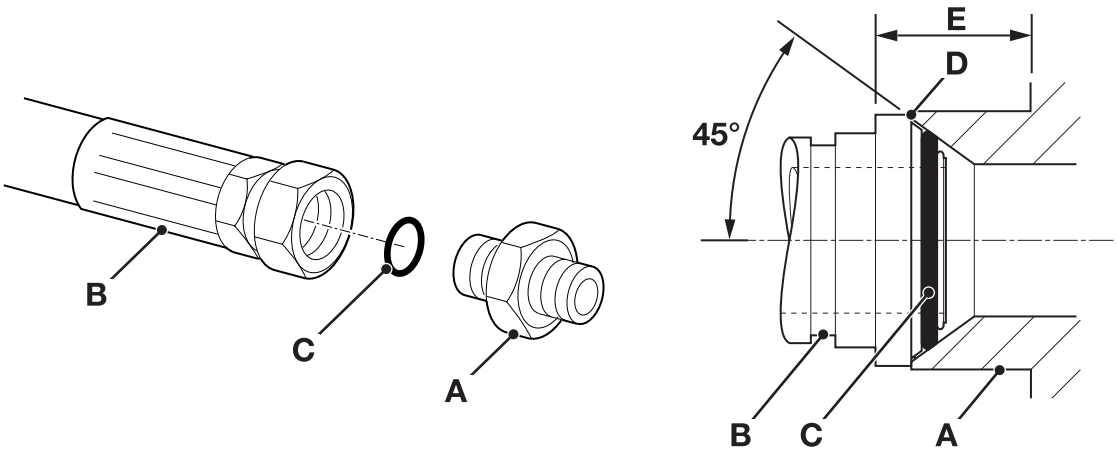



**Fig 3.**

`Torque Stop' Hoses **3-B** screwed into adaptors **3-A** seal onto an 'O' ring **3-C** which is compressed into a 45° seat machined in the face of the adaptor port. To prevent the 'O' ring being damages as a result of over tightening, 'Torque Stop' Hoses have an additional shoulder **3-D**, which acts as a physical stop.

***Note:*** *Minimum dimension **3-E** fixed by shoulder **3-D**.*

**Table 12. BSP `Torque Stop' Hose - Torque Settings**

| BSP Hose Size | Hexagon (A/F) | | | |
|---|---|---|---|---|
| in. | mm | Nm | kgf m | lbf ft |
| 1/8 | 14.0 | 14.0 | 1.4 | 10.0 |
| 1/4 | 19.0 | 27.0 | 2.7 | 20.0 |
| 3/8 | 22.0 | 40.0 | 4.1 | 30.0 |
| 1/2 | 27.0 | 55.0 | 5.6 | 40.0 |
| 5/8 | 30.0 | 65.0 | 6.6 | 48.0 |
| 3/4 | 32.0 | 95.0 | 9.7 | 70.0 |
| 1 | 38.0 | 120.0 | 12.2 | 89.0 |
| 1 1/4 | 50.0 | 189.0 | 19.3 | 140.0 |
| 1 1/2 | 55.0 | 244.0 | 24.9 | 180.0 |

# Service Tools

## Numerical List

The tools listed in the table are special tools required for carrying out the procedures described in this manual. These tools are available from JCB Service.

Some tools are available as kits or sets, the part numbers for parts within such kits or sets are not listed here. For full details of all tools, including the content of kits and sets, refer to ***Tool Detail Reference, Section 1***.

***Note:*** *Tools other than those listed will be required. It is expected that such general tools will be available in any well equipped workshop or be available locally from any good tool supplier.*

| Part Number | Description | See Section |
|---|---|---|
| 993/68100 | Slide Hammer Kit - see ***Tool Detail Reference (Section 1)*** for content | **B** |
| - | Rivet Nut Tool - see ***Tool Detail Reference (Section 1)*** | **B** |
| 892/00842 | Glass Lifter | **B** |
| 892/00843 | Folding Stand for Holding Glass | **B** |
| 892/00845 | Cartridge Gun | **B** |
| 892/00846 | Glass Extractor (Handles) | **B** |
| 892/00847 | Nylon Spatula | **B** |
| 892/00848 | Wire Starter | **B** |
| 892/00849 | Braided Cutting Wire | **B** |
| 926/15500 | Rubber Spacer Blocks | **B** |
| 992/12300 | 12V Mobile Oven | **B** |
| 992/12400 | 240V Static Oven (2 Cartridge) | **B** |
| 992/12800 | Cut-Out Knife | **B** |
| 992/12801 | 'L' Blades | **B** |
| 4104/1310 | Hand Cleaner | **B** |
| 892/00281 | AVO Meter (not illustrated) | **C** |
| 892/00298 | Fluke Meter | **C** |
| 892/00285 | Hyd. Oil Temperature Probe | **C** |
| 892/00284 | Digital Tachometer | **C** |
| 892/01174 | DLA Kit | **C** |
| 331/22966 | Pump Drive Alignment Tool (not illustrated) | **E** |
| - | Male Adapters - BSP x BSP - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Male Adapters - BSP x NPT (USA only) - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Pressure Test Points - Adaptors - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Pressure Test Points - 'T' Adaptors - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | 'T' Adaptors - see ***Tool Detail Reference (Section 1)*** | **E** |

Numerical List

| Part Number | Description | See Section |
|---|---|---|
| - | Female Blanking Caps - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Male Cone Blanking Caps - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Female Connectors - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Bonded Washers - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Ram Protection Sleeves - see ***Tool Detail Reference (Section 1)*** | **E** |
| 892/00334 | Ram Seal Fitting Tool | **E** |
| | Hexagon Spanners - see ***Tool Detail Reference (Section 1)*** | **E** |
| 892/01027 | Piston Seal Assembly Tool | **E** |
| - | Hydraulic Flow Test Equipment - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Hydraulic Circuit Pressure Test Kit - see ***Tool Detail Reference (Section 1)*** for content | **E** |
| - | Hydraulic Hand Pump Equipment - see ***Tool Detail Reference (Section 1)*** | **E** |
| 992/10100 | Spool Clamp | **E** |
| 892/00039 | Spool Clamp | **E** |
| 992/02800 | ARV Extractor | **E** |
| 331/31069 | Test Block for A.R.V. | **E** |
| 892/00891 | Valve Spool Seal Fitting Tool | **E** |
| 892/00346 | Gauge | **E** |
| 892/00279 | Gauge | **E** |
| 892/00280 | Gauge | **E** |
| 892/00347 | Connector | **E** |
| 892/00254 | Hose | **E** |
| - | Ram Jigs - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Ram Piston Nut Spanners - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Socket Box Wrench | **E** |
| - | Nut Adapter | **E** |
| - | Seal Ring Tool | **E** |
| - | Stopper | **E** |
| - | Bearing Rig | **E** |
| - | Inserting Seal Ring and Correction Jig - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Jig for Pulling Out, Press-fitting Bushing - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Jig for Press-fitting Wiper Ring - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Jig for Inserting Cylinder Head - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Seal Ring and Connector Jig - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Bush Removal Jig - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Bush Fitting Jig - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Wiper Ring Fitting Jig - see ***Tool Detail Reference (Section 1)*** | **E** |
| - | Wiper Ring Fitting Jig - see ***Tool Detail Reference (Section 1)*** | **E** |

Numerical List

| Part Number | Description | See Section |
|---|---|---|
| 892/00041 | De-glazing Tool | K |

# Tool Detail Reference

## Section B - Body and Framework

***Note:*** *Not all service tools are illustrated.*

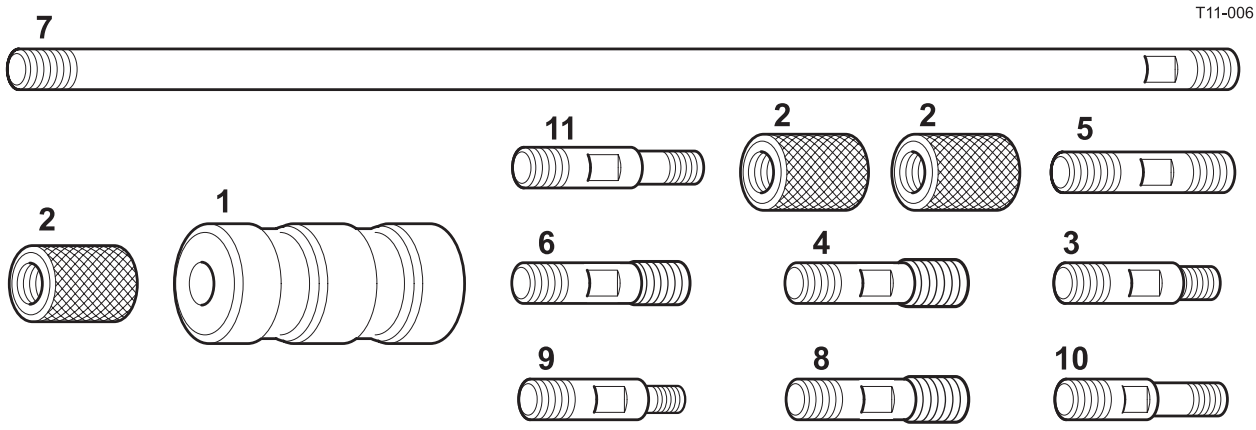



**Fig 1. 993/68100 Slide Hammer Kit**

| | | | | | |
|---|---|---|---|---|---|
| **1** | 993/68101 | Slide Hammer | **7** | 993/68107 | Bar - M20 x M20 X 800 mm |
| **2** | 993/68102 | End Stops | **8** | 993/68108 | Adaptor - M20 x 7/8" UNF |
| **3** | 993/68103 | Adaptor - M20 x 5/8" UNF | **9** | 993/68109 | Adaptor - M20 x M12 |
| **4** | 993/68104 | Adaptor - M20 x 1" UNF | **10** | 993/68110 | Adaptor - M20 x 5/8" UNF (Shoulder) |
| **5** | 993/68105 | Adaptor - M20 x M20 | **11** | 993/68111 | Adaptor - M20 x 1/2" UNF |
| **6** | 993/68106 | Adaptor - M20 x M24 | | | |

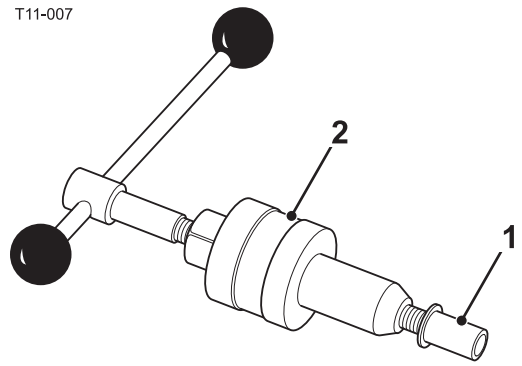



**Fig 2. Rivet Nut Tool**

| | | |
|---|---|---|
| **1** | 826/01099 | M6 x 16 mm Rivet Nut |
| | 826/01101 | M6 x 19 mm Rivet Nut |
| | 826/01102 | M8 x 18 mm Rivet Nut |
| | 826/01103 | M8 x 21 mm Rivet Nut |
| | 826/01104 | M10 x 23 mm Rivet Nut |
| | 826/01105A | M10 x 26 mm Rivet Nut |
| **2** | - | Installation Tool available from: Bollhoff Fastenings Ltd (***www.bollhof.com***) |

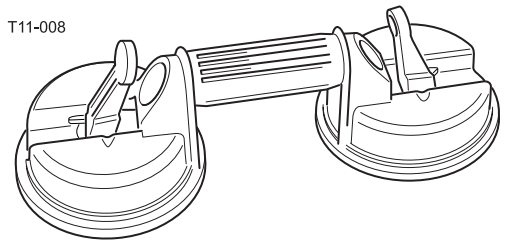



**Fig 3. 892/00842 Glass Lifter**

Minimum 2 off - Essential for glass installation, 2 required to handle large panes of glass. Ensure suction cups are protected from damage during storage.

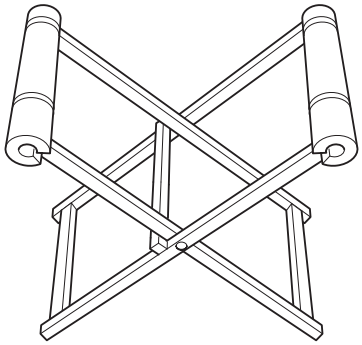


**Fig 4. 892/00843 Folding Stand**

Essential for preparing new glass prior to installation.

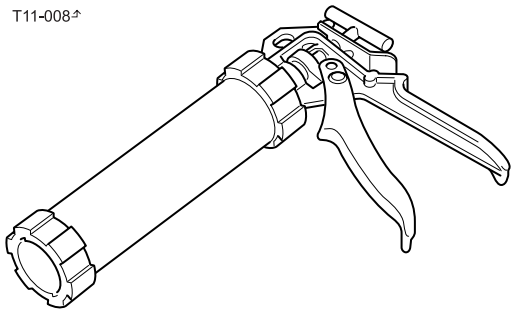



**Fig 5. 892/00845 Cartridge Gun**

Hand operated. Essential for the application of sealants, polyurethane materials etc.

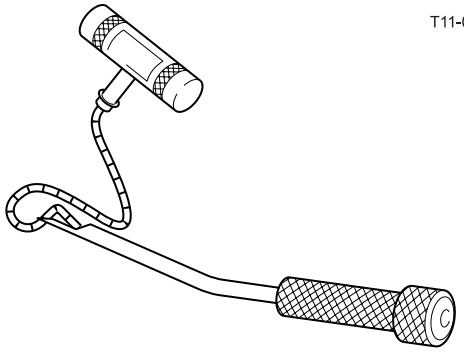



**Fig 6. 892/00846 Glass Extractor (Handles)**

Used with braided cutting wire to cut out broken glass. ⇒ *Fig 9. (1-18)*.

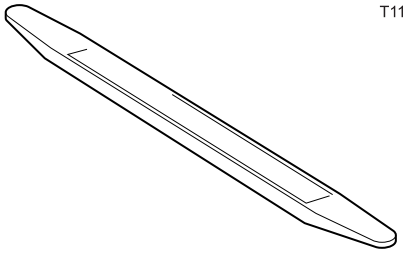



**Fig 7. 892/00847 Nylon Spatula**

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

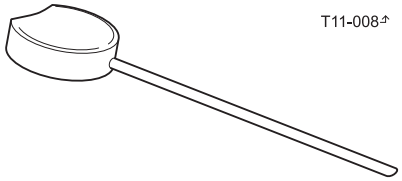



**Fig 8. 892/00848 Wire Starter**

Used to access braided cutting wire through original polyurethane seal. ⇒ *Fig 9. (1-18)*.

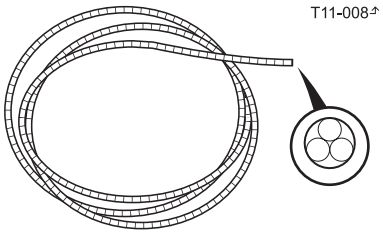



**Fig 9. 892/00849 Braided Cutting Wire**

Consumable heavy duty cut-out wire used with the glass extraction tool. ⇨ ***Fig 6. (1-17)***. Approx 25 m length.

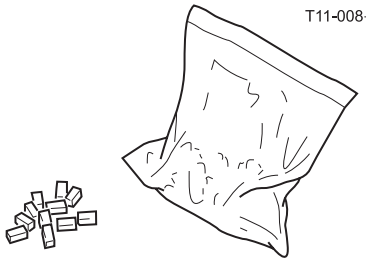



**Fig 10. 926/15500 Rubber Spacer Blocks**

Used to provide the correct set clearance between glass edge and cab frame. Unit quantity = 500 off.

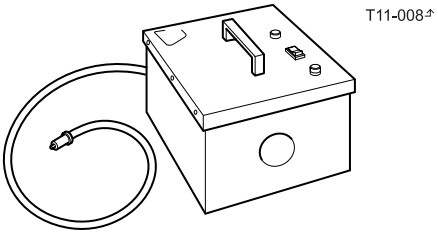



**Fig 11. 992/12300 Mobile Oven 12V**

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).

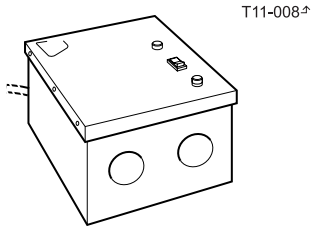



**Fig 12. 992/12400 Static Oven 240V**

Required to pre-heat adhesive prior to use. No plug supplied.

***Note:*** *110Vmodelsavailableuponrequest-contactJCB Technical Service.*

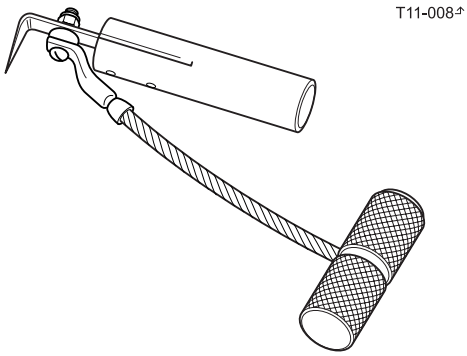



**Fig 13. 992/12800 Cut-Out Knife**

Used to remove broken glass.

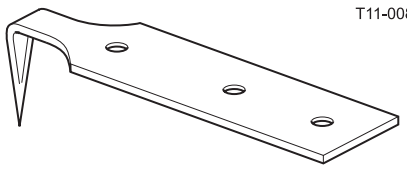



**Fig 14. 992/12801 'L' Blades**

25 mm (1 in.) cut. Replacement blades for cut-out knife. ⇨ ***Fig 13. (1-18)***. Unit quantity = 5 off.

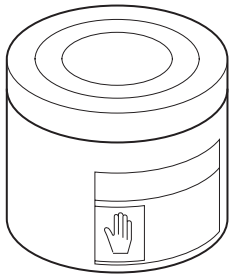



**Fig 15. 4104/1310 Hand Cleaner**

Special blend for the removal of polyurethane adhesives (454g; 1 lb tub).

## Section C - Electrics

***Note:*** *Not all service tools are illustrated.*

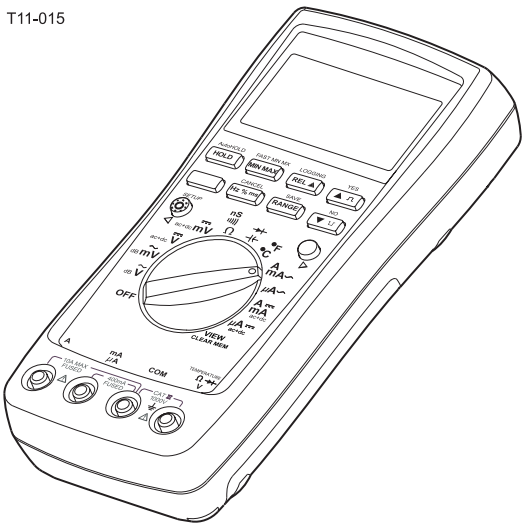



**Fig 16. 892/00298 Fluke Meter**

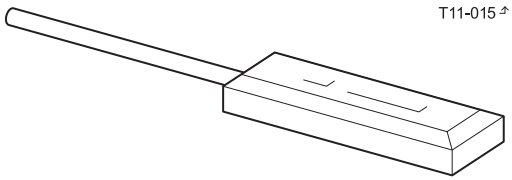



**Fig 17. 892/00285 Hydraulic Temperature Probe**

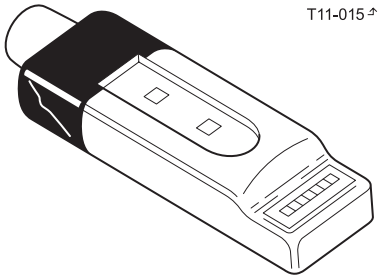



**Fig 18. 892/00284 Venture Microtach Digital Tachometer**

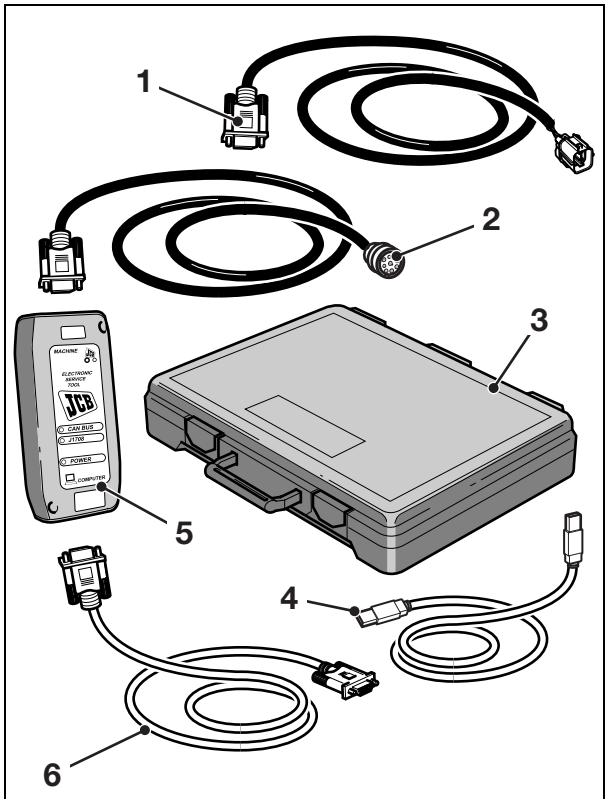



**Fig 19. 892/01174**

| | |
|---|---|
| 1 | Interconnecting cable, DLA to machine ECU diagnostics socket. |
| 2 | Interconnecting cable, DLA to machine ECU diagnostics socket. |
| 3 | Kit carrying case. |
| 4 | Interconnecting cable, DLA to laptop PC. |
| 5 | Data Link Adaptor (DLA), enables data exchange between the machine ECU (Electronic Control Unit) and a laptop PC loaded with the applicable diagnostics software. |
| 6 | Interconnecting cable, DLA to laptop PC. |

## Section E - Hydraulics

***Note:*** *Not all service tools are illustrated.*

T11-010

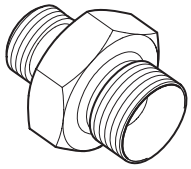


**Fig 20. Male Adaptors**

| | Male Adapters - BSP x NPT (USA only) |
|---|---|
| 816/00439 | 3/8 in. x 1/4 in. |
| 816/00440 | 1/2 in. x 1/4 in. |
| 816/15007A | 3/8 in. x 3/8 in. |
| 816/15008 | 1/2 in. x 3/8 in. |

| | Male Adapters - BSP x BSP |
|---|---|
| 1606/2052 | 3/8 in. x 1/4 in. |
| 1604/0003A | 3/8 in. x 3/8 in. |
| 892/00071 | 3/8 in. x 3/8 in. taper |
| 1606/0004 | 1/2 in. x 1/4 in. |
| 1606/0007A | 1/2 in. x 3/8 in. |
| 1604/0004A | 1/2 in. x 1/2 in. |
| 1606/0017 | 5/8 in. x 1/2 in. |
| 1606/0008 | 3/4 in. x 3/8 in. |
| 1606/0009 | 3/4 in. x 1/2 in. |
| 1604/2055 | 3/4 in. x 3/4 in. |
| 1606/0012 | 3/4 in. x 1 in. |
| 1606/0014 | 3/4 in. x 1.1/4 in. |
| 1606/0015 | 1 in. x 1.1/4 in. |

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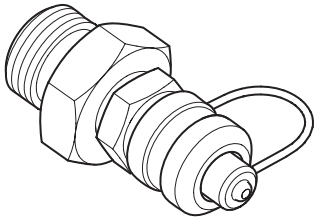

**Fig 21. Pressure Test Adapters**

| | |
|---|---|
| 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 |

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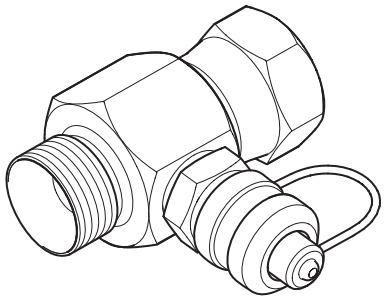

**Fig 22. Pressure Test 'T' Adapters**

| | |
|---|---|
| 816/55045 | 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 |
| 892/00266 | 1.1/4 in. M BSP x 1.1/4 in. F BSP x Test Point |
| 892/00267 | 1.1/4 in. M BSP x 1.1/2 in. F BSP x Test Point |

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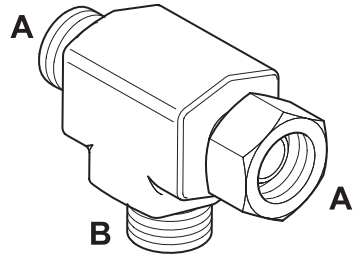


**Fig 23. 'T' Adapters**

| | |
|---|---|
| 892/00047 | 3/8 in. BSP (**A**) x 1/4 in. BSP (**B**) |
| 892/00048 | 1/2 in. BSP (**A**) x 1/4 in. BSP (**B**) |
| 892/00049 | 5/8 in. BSP (**A**) x 1/4 in. BSP (**B**) |
| 816/50043 | 3/4 in. BSP (**A**) x 1/4 in. BSP (**B**) |
| 892/00051 | 1 in. BSP (**A**) x 1/4 in. BSP (**B**) |
| 816/50005 | 1/2 in. BSP (**A**) x 1/2 in. BSP (**B**) |
| 816/60096 | 3/4 in. BSP (**A**) x 3/4 in. BSP (**B**) |
| 816/00017 | 1 in. BSP (**A**) x 1 in. BSP (**B**) |

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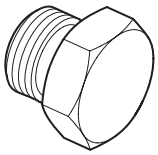

**Fig 24. Female Blanking Caps**

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

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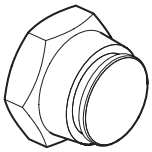

**Fig 25. Male Cone Blanking Caps**

| | |
|---|---|
| 816/90045 | 1/4 in. BSP |
| 816/00189A | 3/8 in. BSP |
| 816/00190A | 1/2 in. BSP |
| 816/90022 | 5/8 in. BSP |
| 816/90274 | 3/4 in. BSP |
| 816/90205 | 1 in. BSP |

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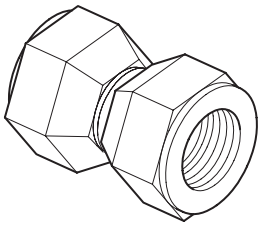

**Fig 26. Female Connectors**

| | |
|---|---|
| 892/00074 | 3/8 in. BSP x 3/8 in. BSP |
| 892/00075 | 1/2 in. BSP x 1/2 in. BSP |
| 892/00076 | 5/8 in. BSP x 5/8 in. BSP |
| 892/00077 | 3/4 in. BSP x 3/4 in. BSP |

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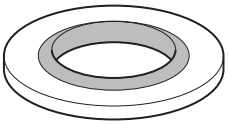


**Fig 27. Bonded Washers**

| | |
|---|---|
| 1406/0011 | 1/4 in. BSP |
| 1406/0018 | 1/2 in. BSP |
| 1406/0014 | 5/8 in. BSP |
| 1406/0021 | 3/4 in. BSP |
| 1406/0029 | 1.1/4 in. BSP |

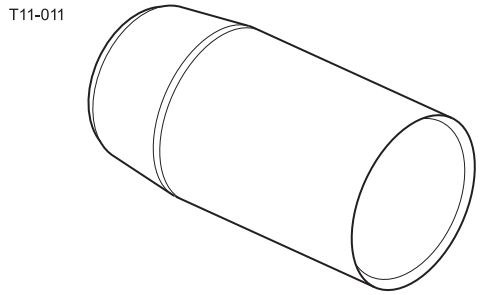



**Fig 28. Ram Protection Sleeves**

| | |
|---|---|
| 892/01016 | For 25 mm Rod Diameter |
| 892/01017 | For 30 mm Rod Diameter |
| 892/01018 | For 40 mm Rod Diameter |
| 892/01019 | For 50 mm Rod Diameter |
| 892/01020 | For 50 mm Rod Diameter (slew ram) |
| 892/01021 | For 60 mm Rod Diameter |
| 892/01022 | For 60 mm Rod Diameter (slew ram) |
| 892/01023 | For 65 mm Rod Diameter |
| 892/01024 | For 70 mm Rod Diameter |
| 892/01025 | For 75 mm Rod Diameter |
| 892/01026 | For 80 mm Rod Diameter |
| 892/00167 | For 90 mm Rod Diameter |

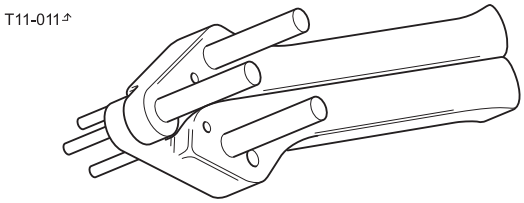



**Fig 29. 892/00334 Ram Seal Fitting Tool**

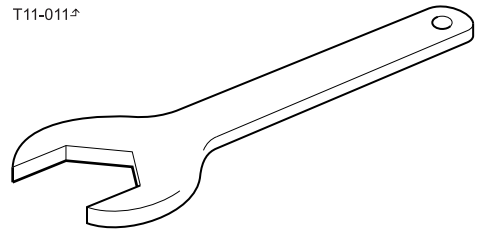



**Fig 30. Hexagon Spanners for Ram Pistons and End Caps**

| | |
|---|---|
| 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 |

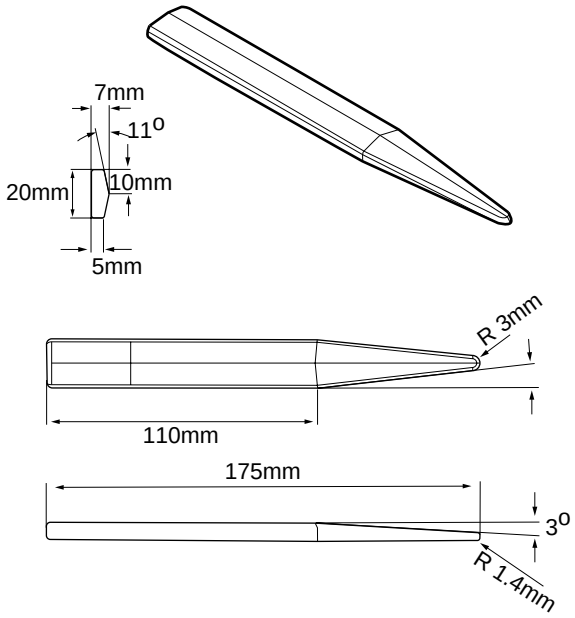
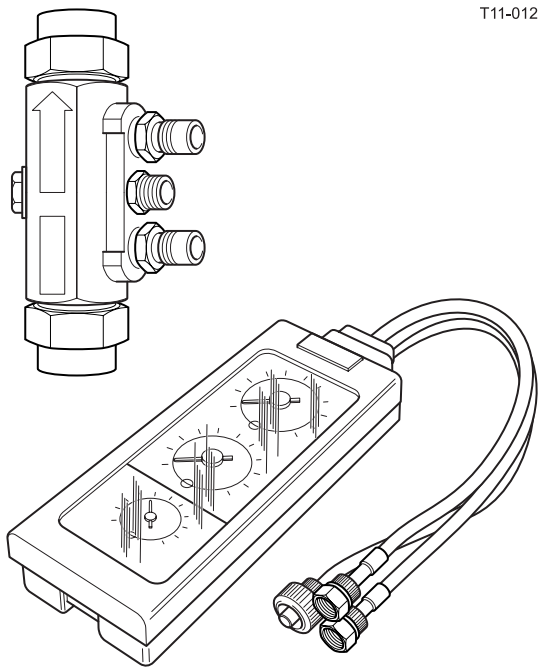
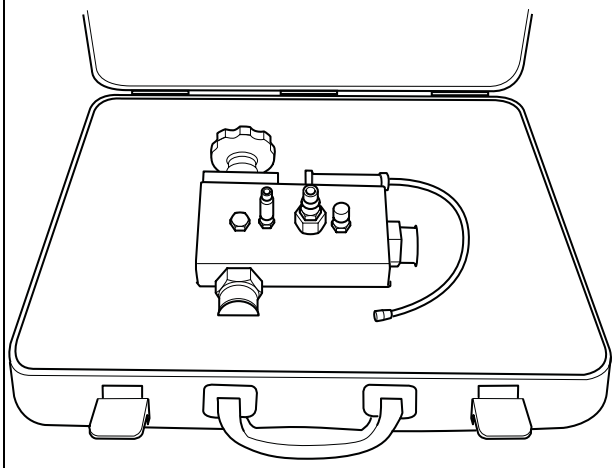
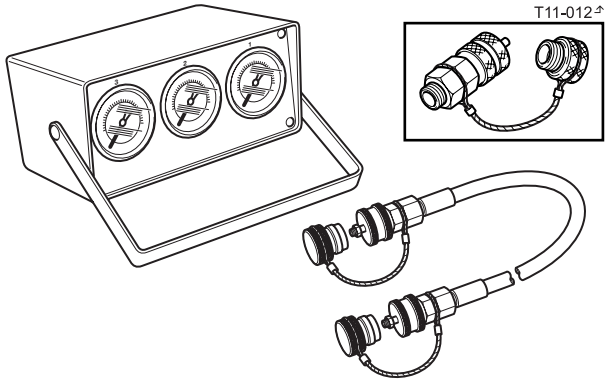
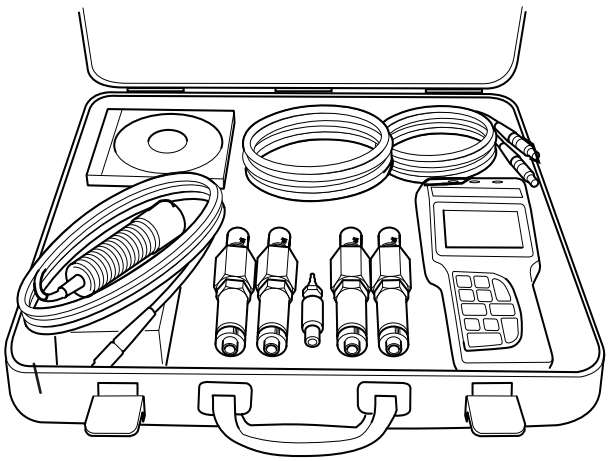



**Fig 31. 892/01027 Piston Seal Assembly Tool**

| | | |
|---|---|---|
| ***Note:*** *No longer available, refer to 998/11046 JCB ServiceMaster Flow Test Kit.* ⇒ ***Fig 33. (1-24)***. | 892/00268 | Flow Monitoring Unit |
|  **Fig 32. Flow Test Equipment** | 892/00269 | Sensor Head 0 - 100 l/min (0 - 22 UK gal/min) |
| | 892/00273 | Sensor Head 0 - 380 l/min (0 - 85.5 UK gal/min) |
| | 892/00293 | Connector Pipe |
| | 892/00270 | Load Valve |
| | 1406/0021 | Bonded Washer |
| | 1604/0006A | Adapter 3/4 in M x 3/4 in M BSP |
| | 1612/2054 | 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 |
| | 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 |

| | | |
|---|---|---|
|  **Fig 33. 998/11046 JCB ServiceMaster Flow Test Kit** | 998/11047 | 600 LPM Flow Turbine with Loading Valve |
| | 998/11048 | 1-7/8" UNF x1 - 1/4" BSP Flow Block Adaptors x2 |
| | 998/11049 | Carrying Case for Flow Test Kit |
| | 998/11050 | Temperature Sensor (125°C Max) |

| | | |
|---|---|---|
| ***Note:*** *No longer available, refer to 998/11051 JCB ServiceMaster Digital Hydraulic Datalogger Pressure Test Kit.* ⇒ *Fig 35. (1-25)*. | 892/00201 | Replacement Gauge 0-20 bar (0-300 lbf/in²) |
|   **Fig 34. 892/ 00253 Hydraulic Circuit Pressure Test Kit** | 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) |
| | 892/00706 | Test Probe |
| | 892/00347 | Connector - Hose to gauge |

| | | |
|---|---|---|
|  **Fig 35. 998/11051 JCB ServiceMaster Digital Hydraulic Datalogger Pressure Test Kit** | 998/11052 | Hand Held 4-Channel ServiceMaster Unit |
| | 998/11053 | SensoWin Software Kit and PC Cable |
| | 998/11054 | Equiment Case SCC-750 |
| | 998/11055 | 0-600 Bar Pressure Transduce x2 |
| | 998/11056 | 0-100 Bar pressureTransducer x2 |
| | 998/11057 | RPM Tachometer (includes fixed cable, 2 meters) |
| | 998/11058 | 5 Meter Connecting Cable |
| | 998/11059 | M16 Metric Adaptors for Test Points x4 |
| | 998/11060 | 400mm Test Hose 90˚ HSP to M16 x2 |
| | 998/11061 | 400mm Test Hose Straight HSP to M16 x2 |

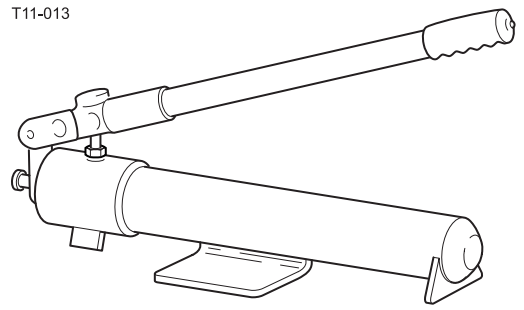



**Fig 36. Hand Pump Equipment**

| | |
|---|---|
| 892/00223 | Hand Pump |
| 892/00137 | Micro-bore Hose 1/4 in BSP x 3 metres |
| 892/00274 | Adapter 1/4 in M BSP x 3/8 in M BSP Taper |
| 892/00262 | 1/4 in M BSP x 1/4 in F BSP x Test Point |
| 892/00706 | Test Probe |
| 892/00278 | Gauge 0 - 40 bar (0 - 600 lbf/in$^2$) |
| 892/00279 | Gauge 0 - 400 bar (0 - 6000 lbf/in$^2$) |

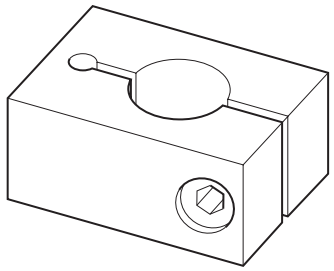


**Fig 37. Spool Clamps**

| | |
|---|---|
| 892/00039 | Spool Clamp |
| 992/10100 | Spool Clamp - Diameter 19mm (3/4 in) |
| 992/02800 | ARV Extractor |

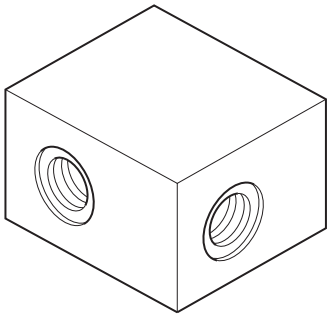


**Fig 38. 331/31069 - Test Block for A.R.V.**

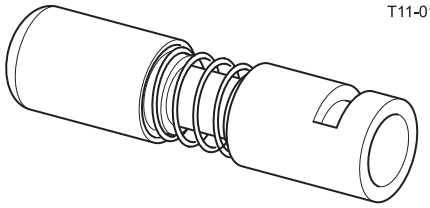



**Fig 39. 892/00881 Valve Spool Seal Fitting Tool**

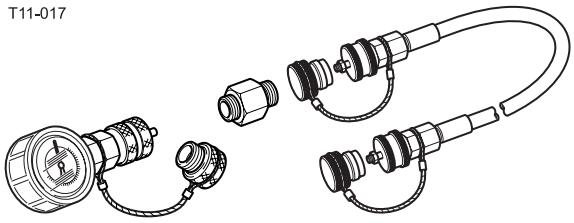



**Fig 40. Hydraulic Circuit Test Gauges and Connections**

| | |
|---|---|
| 892/00280 | Pressure Gauge 0-600 bar (0-9000 lbf/in$^2$) |
| 892/00279 | Pressure Gauge 0-400 bar (0-6000 lbf/in$^2$) |
| 892/00346 | Pressure Gauge 0-70 bar (0-1000 lbf/in$^2$) |
| 892/00347 | Connector |
| 892/00254 | Hose |

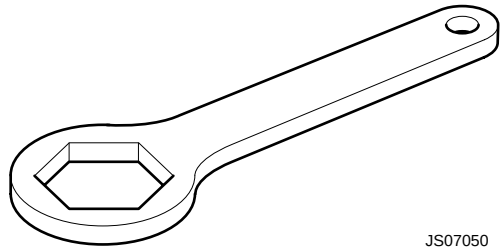



**Fig 41. Ram Piston Nut Removal/Fitting Spanner**

| | |
|---|---|
| 993/99512 | Spanner 55 mm A/F |
| 993/99513 | Spanner 60 mm A/F |
| 993/99514 | Spanner 65 mm A/F |
| 993/99515 | Spanner 70 mm A/F |
| 993/99516 | Spanner 75 mm A/F |
| 993/99517 | Spanner 85 mm A/F |
| 993/99518 | Spanner 90 mm A/F |
| 993/99519 | Spanner 100 mm A/F |
| 993/99520 | Spanner 110 mm A/F |
| 993/99521 | Spanner 115 mm A/F |
| SSP0046 | Spanner 80 mm A/F |
| SSP0047 | Spanner 95 mm A/F |

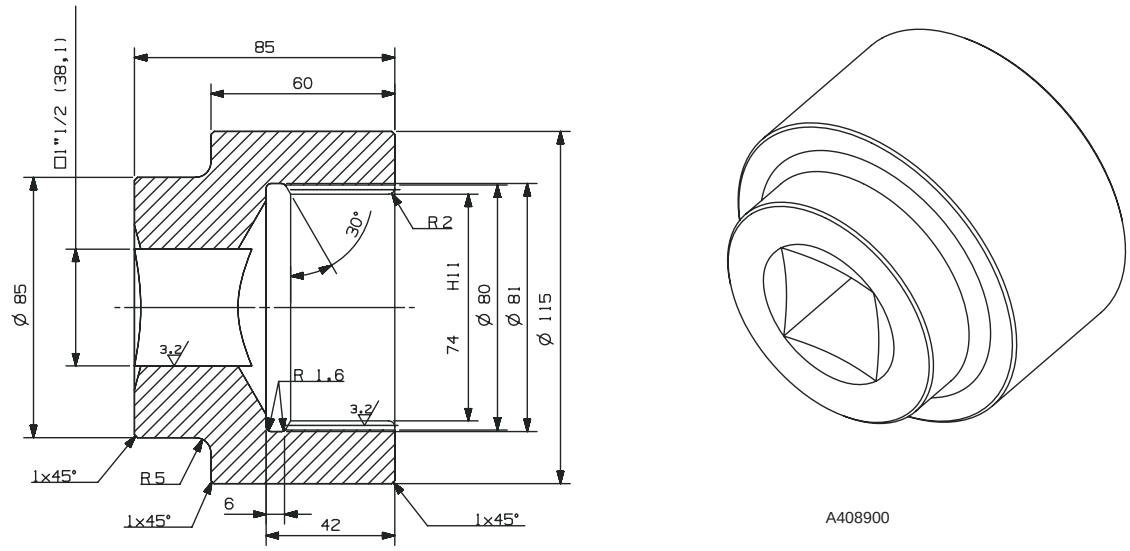



**Fig 42. Socket Box Wrench**

***Note:*** *For disassembly and assembly of slew motor gearbox. This tool can not be ordered from JCB.*

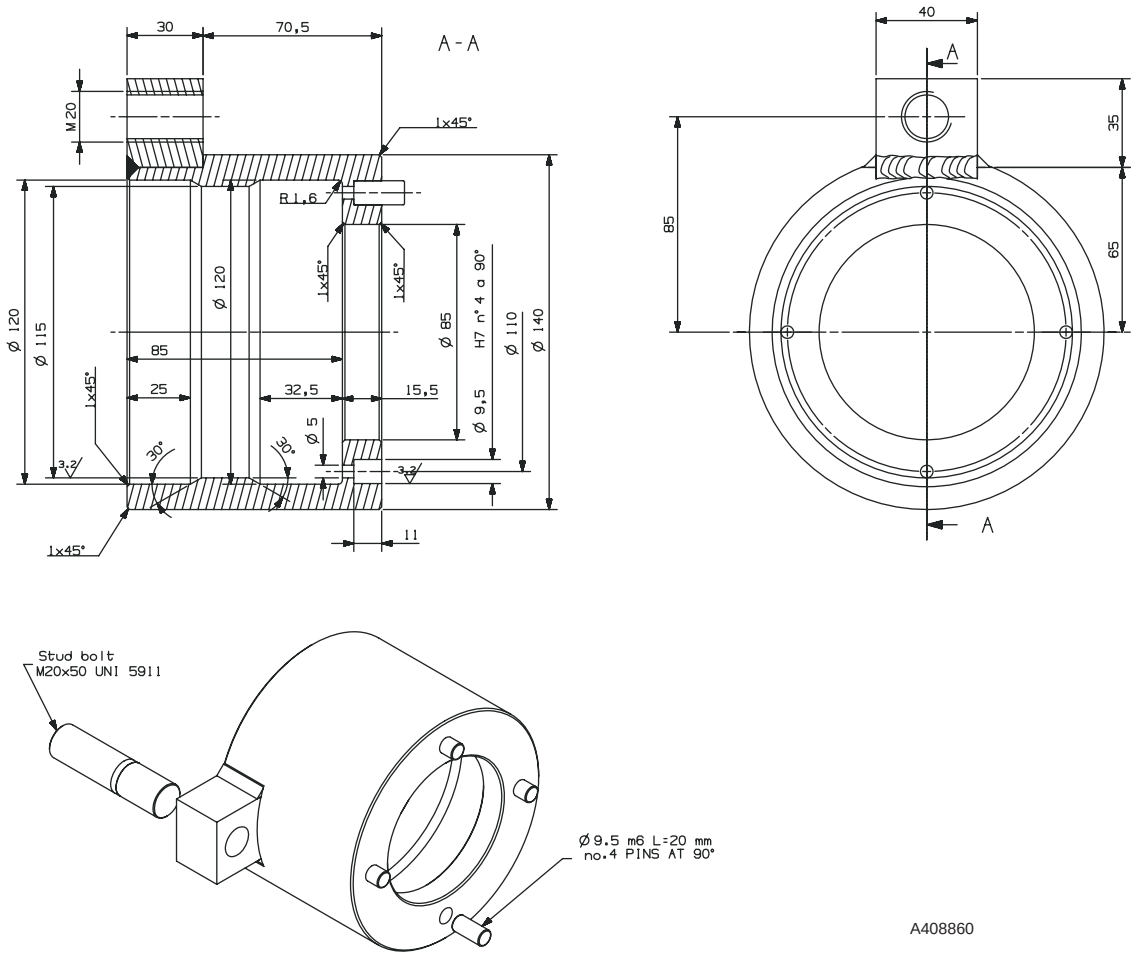



**Fig 43. Nut Adapter**

***Note:*** *For disassembly and assembly of slew motor gearbox. This tool can not be ordered from JCB.*

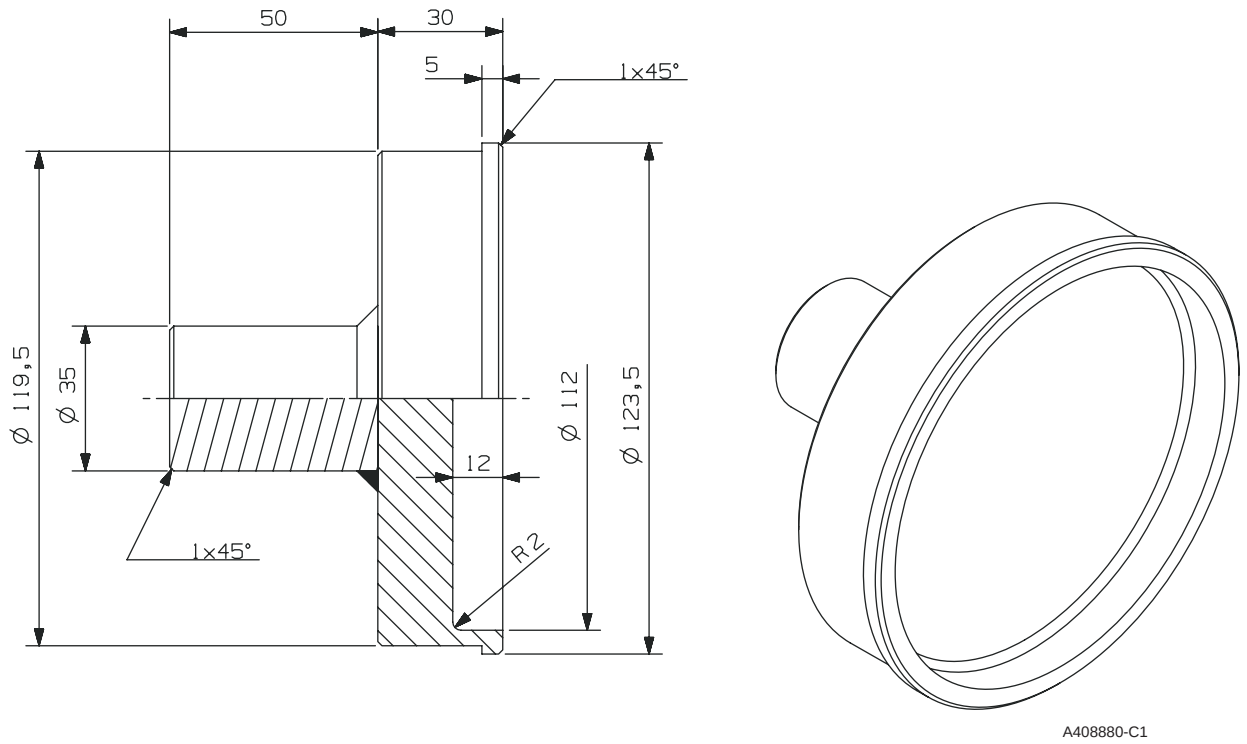



**Fig 44. Seal Ring Tool**

***Note:*** *For assembly and disassembly of slew motor gearbox seal. This tool can not be ordered from JCB.*

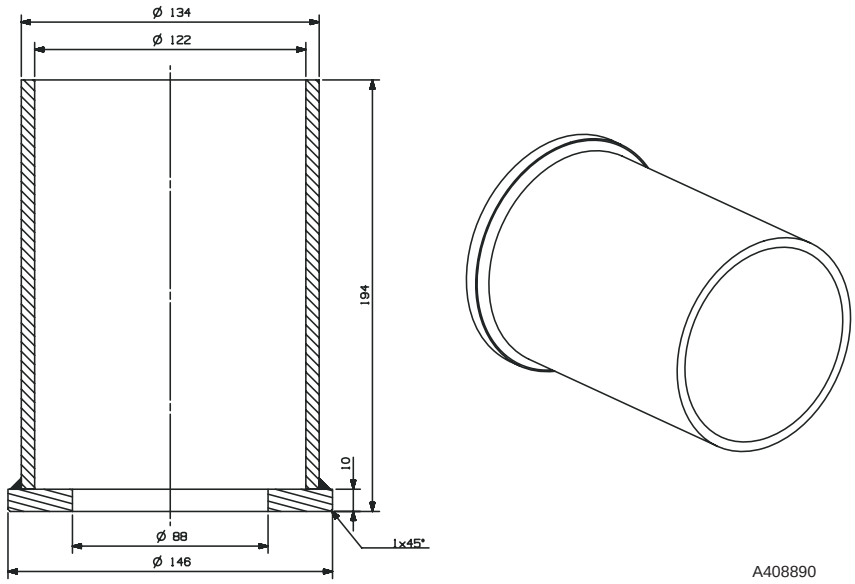



**Fig 45. Stopper**

***Note:*** *For assembly of slew motor gearbox. This tool can not be ordered from JCB.*

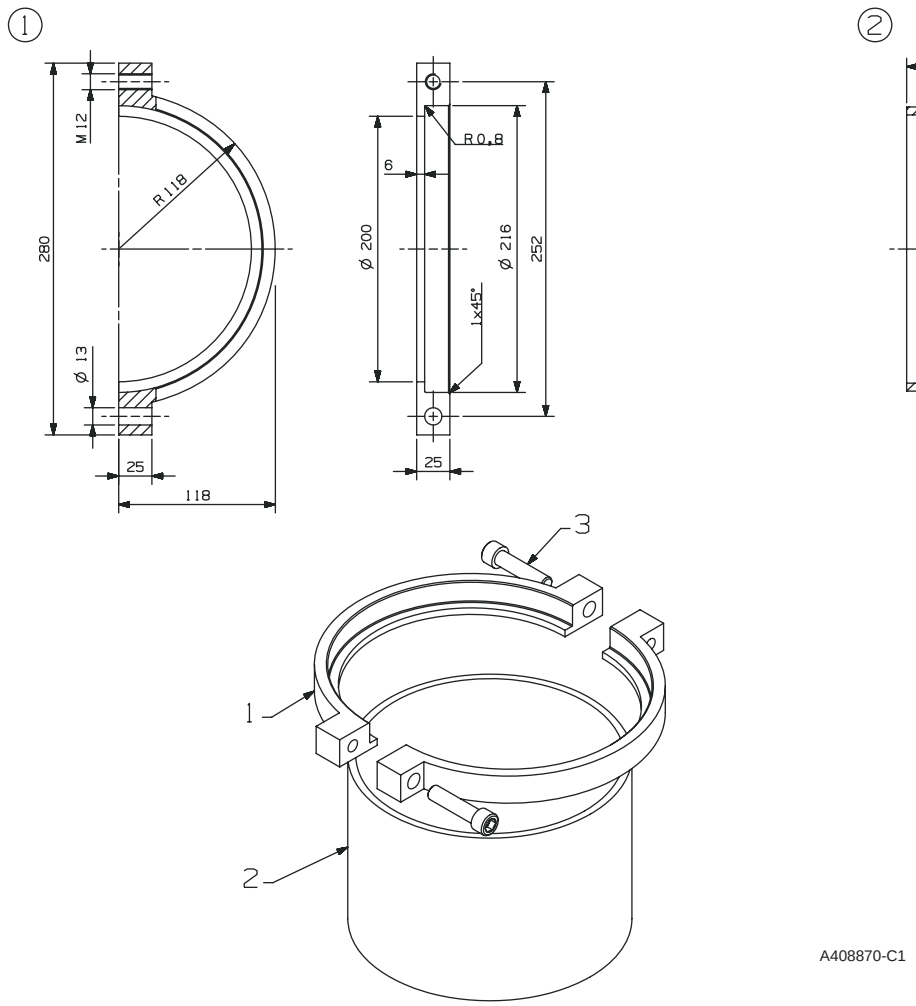



**Fig 46. Bearing Rig**

***Note:*** *For removal of slew motor bearing. This tool can not be ordered from JCB.*

### Inserting Seal Ring and Correction Jig

| | | |
|---|---|---|
| WDB 2052 | Bucket | 120mm Cylinder inner diameter |
| WDB 2054 | Boom | 125mm Cylinder inner diameter |
| WDB 2164 | Boom | 130mm Cylinder inner diameter |
| WDB 2056 | Arm | 150mm Cylinder inner diameter |

### Jig for Pulling Out, Press-fitting Bushing

| | | |
|---|---|---|
| WDB 2166 | Bucket | 80mm Piston Rod diameter |
| WDB 2167 | Boom | 85mm Piston Rod diameter |
| WDB 2170 | Arm | 100mm Piston Rod diameter |
| WDB 2168 | Bucket | 90mm Piston Rod diameter |
| WDB 2168 | Boom | 90mm Piston Rod diameter |
| WDB 2171 | Arm | 105mm Piston Rod diameter |

### Jig for Press-fitting Wiper Ring

| | | |
|---|---|---|
| WDB 2166-1 | Bucket | 80mm Piston Rod diameter |
| WDB 2167-1 | Boom | 85mm Piston Rod diameter |
| WDB 2170-1 | Arm | 100mm Piston Rod diameter |
| WDB 2168-1 | Bucket | 90mm Piston Rod diameter |
| WDB 2168-1 | Boom | 90mm Piston Rod diameter |
| WDB 2171-1 | Arm | 105mm Piston Rod diameter |

### Jig for Inserting Cylinder Head

| | | |
|---|---|---|
| WDB 2174 | Bucket | 80mm Piston Rod inner diameter |
| WDB 2175 | Boom | 85mm Piston Rod inner diameter |
| WDB 2178 | Arm | 100mm Piston Rod inner diameter |
| WDB 2176 | Bucket | 90mm Piston Rod inner diameter |
| WDB 2176 | Boom | 90mm Piston Rod inner diameter |
| WDB 2179 | Arm | 105mm Piston Rod inner diameter |

### Seal Ring and Connector Jig

| | |
|---|---|
| WDB 2052 | Seal Ring insert and connection jig set |
| ***Note:*** *The above Part no. is applicable to a tube diameter of 120mm* | |

### Bush Removal Jig

| | |
|---|---|
| WDB 2166 | Bush removal jig |

| | |
|---|---|
| WDB 2166-1 | Retainer |
| ***Note:*** *The above Part no. is applicable to a rod diameter of 80mm* | |

**Bush Fitting Jig**

| | |
|---|---|
| WDB 2166 | Bush press fitting jig |
| WDB 2166-1 | Retainer |
| ***Note:*** *The above Part no. is applicable to a rod diameter of 80mm* | |

**Wiper Ring Fitting Jig**

| | |
|---|---|
| WDB 2166-1 | Wiper Ring fitting |
| ***Note:*** *The above Part no. is applicable to a rod diameter of 80mm* | |

**Wiper Ring Fitting Jig**

| | |
|---|---|
| WDB 2174 | Cylinder Head insertion guide jig |
| ***Note:*** *The above Part no. is applicable to a rod diameter of 80mm* | |