

Service Manual

JS70

from machine no. 695501

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Issue 0

General Information 1

Care & Safety 2

Routine Maintenance 3

Attachments A

Body & Framework B

Electrics C

Hydraulics E

Transmission F

Brakes G

Track & Running Gear J

Engine K

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 = Attachments**
- B = Body & Framework ...etc**

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

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

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

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

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

Note: In this manual the term 'swing' may sometimes be used in place of 'slew' and the term 'arm' may sometimes be used in place of 'dipper'.

| Contents | Page No. |
|------------------------------------|-----------------|
| Bolt and Nut Torque Specifications | 1 - 1 |
| General Torque Settings | 1 - 2 |
| Service Tools | |
| Section C - Electrics | 4 - 1 |
| Section E - Hydraulics | 5 - 1 |
| Section F - Transmission | 6 - 1 |
| Sealing and Retaining Compounds | 7 - 1 |

Bolt and Nut Torque Specifications

Tighten the bolts and nuts according to the table. Before and after daily work, check the bolts and nuts for looseness and for those missing. Tighten if loose and renew if missing.

Tighten the bolts and nuts after the first 50 hours of the running-in stage and every 250 hours thereafter.

Torque Tightening Table

| No | Tightening Point | Bolt Diameter | Wrench | Tightening Torque | | |
|-----|-----------------------------------|---------------|--------|-------------------|---------------|---------------|
| | | | | Nm | kgf m | lbf ft |
| 1† | Travel Motor | M16 | 24 | 268~312 | 27.2~31.8 | 197~230 |
| 2† | Drive Sprocket | M14 | 22 | 173~202 | 17.6~20.6 | 128~149 |
| 3† | Idler Wheel | M10 | 17 | 63~73 | 6.9~7.4 | 46~54 |
| 4† | Upper (Carrier) Roller | M16 | 24 | 267~312 | 27.2~31.8 | 197~230 |
| 5† | Lower (Track) Roller | M12 | 19 | 109~127 | 11~13 | 80~94 |
| 6† | Grease Cylinder | M12 | 19 | 109~127 | 11~13 | 80~94 |
| 7† | Track Guard | M12 | 19 | 109~127 | 11~13 | 80~94 |
| 8 | Shoe Bolt | U1/2 - 38 | 19 | 196~235 | 20~24 | 145~173 |
| 9† | Counterweight | M24 | 36 | 660~770 | 67.3~78.5 | 487~568 |
| 10† | Turntable Bearing (Undercarriage) | M16 | 24 | 252~283 | 25.7~28.9 | 186~209 |
| 11† | Turntable Bearing (Slew Frame) | M16 | 24 | 252~283 | 25.7~28.9 | 186~209 |
| 12† | Slew Equipment | M16 | 24 | 273~318 | 27.8~32.4 | 201~235 |
| 13† | Engine (Engine Mount) | M16 | 24 | 167~216 | 17~22 | 123~159 |
| 14† | Engine Bracket | M10/M16 | 17/24 | 65~75/167~216 | 6.6~7.7/17~22 | 48~55/123~159 |
| 15 | Radiator | M10 | 17 | 30~35 | 3.1~3.6 | 22~26 |
| 16† | Hydraulic Pump | M10/M12 | 17/19 | 63~73/109~127 | 6.4~7.4/11~13 | 46~54/80~94 |
| 17† | Hydraulic Oil Tank | M16 | 24 | 160~172 | 16.3~17.5 | 118~127 |
| 18† | Fuel Tank | M16 | 24 | 160~172 | 16.3~17.5 | 118~127 |
| 19† | Control Valve | M12 | 19 | 53~65 | 5.4~6.6 | 39~48 |
| 20† | Rotary Coupling | M10 | 17 | 63~73 | 6.4~7.4 | 46~54 |
| 21 | Cab | M16 | 24 | 79~88 | 8~9 | 58~65 |
| 22 | Battery | M10 | 17 | 20~30 | 2~3 | 15~22 |

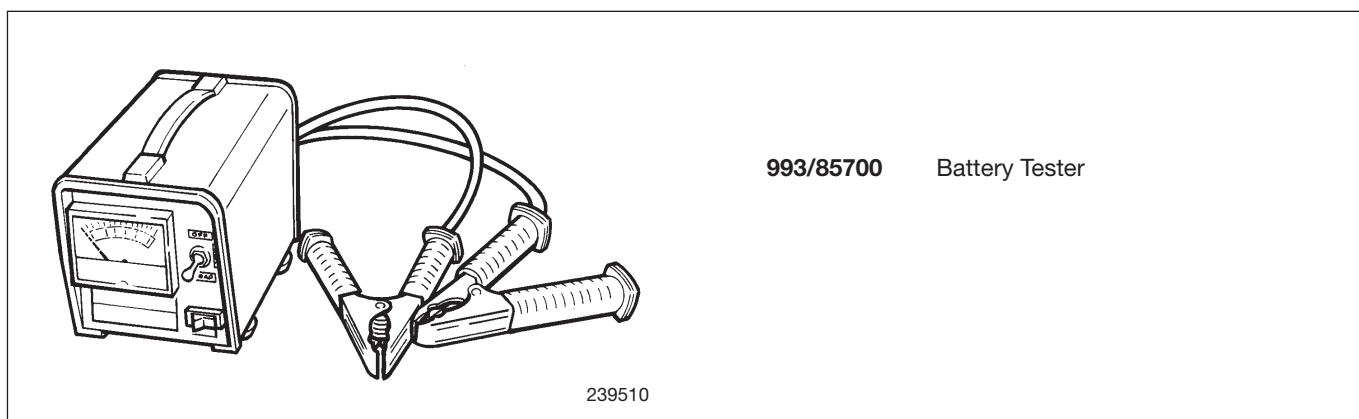
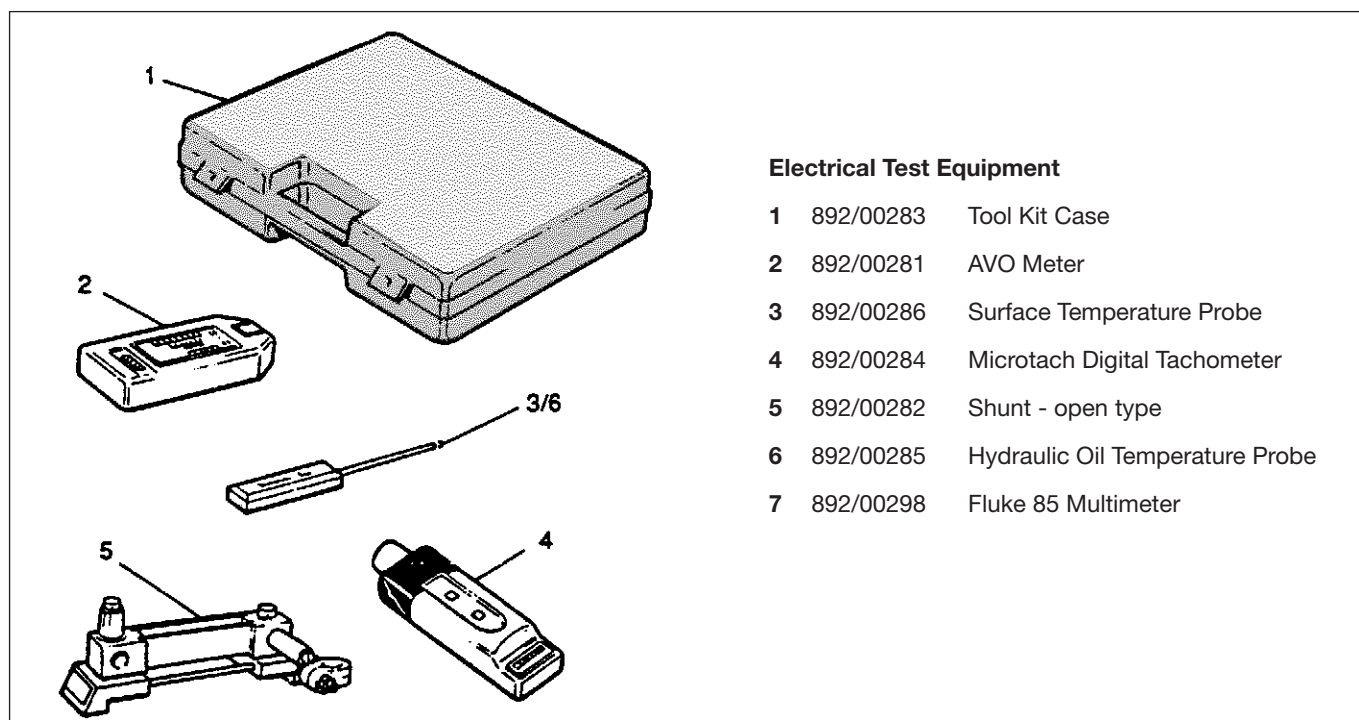
Note: Use JCB Threadlocker and Sealer (High Strength) on those marked † and tighten to the torque listed in the above table.

General Torque Settings

Note 1: The figures quoted are for non-plated fasteners and are to be used only when there is no torque setting specified in the relevant procedure in this service manual.

Note 2: The 4T grade settings DO NOT APPLY to fasteners used on the engine. If any 4T specification fasteners are found on the engine, these must be tightened to the figure quoted in the relevant engine manual.

| Bolt Size | Strength Grade of Bolt or Stud | | | | | | | | |
|------------|--------------------------------|-------|--------|------|-------|--------|------|-------|--------|
| | 4T | | | 8.8 | | | 10.9 | | |
| | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft | Nm | kgf m | lbf ft |
| M3 | 0.39 | 0.04 | 0.28 | - | - | - | - | - | - |
| M4 | 0.78 | 0.08 | 0.57 | - | - | - | - | - | - |
| M5 | 1.67 | 0.17 | 1.2 | - | - | - | - | - | - |
| M6 | 2.84 | 0.29 | 2.1 | 8.04 | 0.82 | 5.9 | 11.3 | 1.15 | 8.3 |
| M8 | 7.06 | 0.72 | 5.2 | 19.6 | 2.00 | 14.5 | 27.7 | 2.82 | 20.4 |
| M10 | 14.0 | 1.43 | 10.3 | 39.1 | 3.99 | 28.8 | 55.0 | 5.61 | 40.6 |
| M12 | 24.6 | 2.51 | 18.1 | 68.5 | 6.98 | 50.5 | 96.2 | 9.81 | 71 |
| M16 | 61.9 | 6.31 | 45.7 | 173 | 17.6 | 127.6 | 242 | 24.7 | 178.5 |
| M20 | 122 | 12.4 | 90 | 337 | 34.4 | 249 | 475 | 48.4 | 350 |
| M22 | 167 | 17.0 | 123 | 464 | 47.3 | 342 | 652 | 66.5 | 481 |
| M24 | 210 | 21.4 | 155 | 584 | 59.5 | 431 | 821 | 83.7 | 606 |
| M27 | 311 | 31.7 | 229 | 864 | 88.1 | 637 | 1220 | 124 | 900 |
| M30 | 420 | 42.8 | 310 | 1170 | 119 | 863 | 1650 | 168 | 1217 |
| M33 | 576 | 58.7 | 425 | 1600 | 163 | 1180 | 2260 | 230 | 1667 |
| M36 | 736 | 75.1 | 543 | 2050 | 209 | 1512 | 2880 | 294 | 2124 |
| M39 | 961 | 98.0 | 709 | 2680 | 273 | 1977 | 3760 | 383 | 2773 |
| M42 | 1190 | 121 | 878 | 3300 | 336 | 2434 | 4640 | 473 | 3422 |
| M45 | 1490 | 152 | 1099 | 4140 | 422 | 3054 | 5820 | 593 | 4293 |
| M48 | 1780 | 182 | 1312 | 4960 | 506 | 3659 | 6970 | 711 | 5141 |

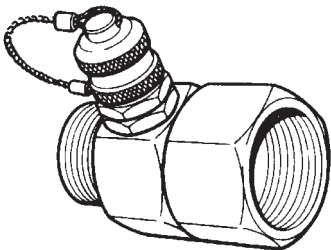
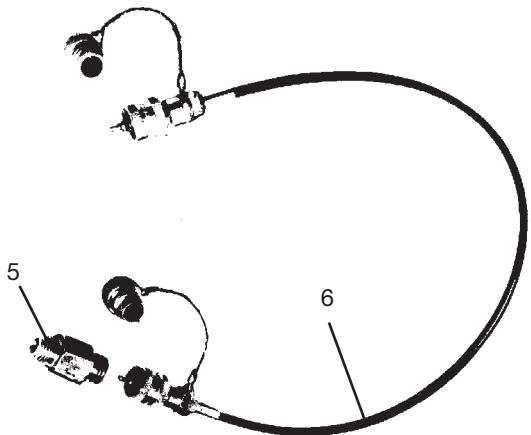
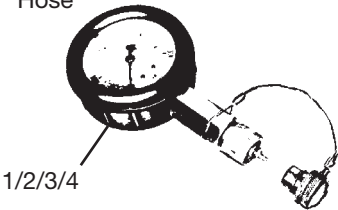
Service Tools**SECTION C - ELECTRICS**

Service Tools (continued)

SECTION E - HYDRAULICS

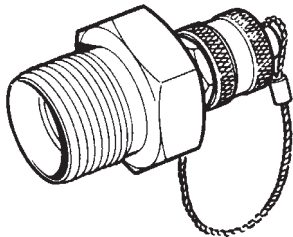
Hydraulic Pressure Test Gauges and Connections

| | | |
|---|-----------|--|
| 1 | 892/00346 | Pressure Gauge 0-70 bar (0-1000 lbf/in ²) |
| 2 | 892/00898 | Pressure Gauge 0-100 bar (0-1500 lbf/in ²) |
| 3 | 892/00279 | Pressure Gauge 0-400 bar (0-6000 lbf/in ²) |
| 4 | 892/00280 | Pressure Gauge 0-600 bar (0-8500 lbf/in ²) |
| 5 | 892/00347 | Connector |
| 6 | 892/00254 | Hose |



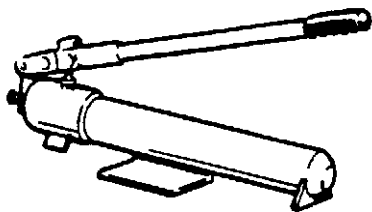
Pressure Test 'T' Adapters

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

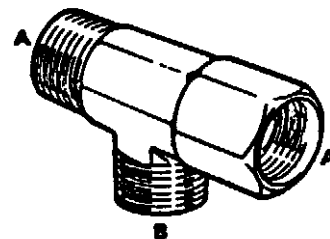


Pressure Test Adapters

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

Service Tools (continued)**SECTION E - HYDRAULICS****Hand Pump Equipment**

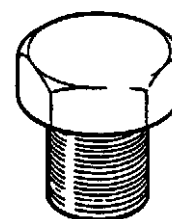
| | |
|-----------|--|
| 892/00223 | Hand Pump |
| 892/00137 | Micro-bore Hose 1/4 in BSP x 5 metres |
| 892/00274 | Adapter 1/4 in M BSP x 3/8 in M BSP Taper |
| 892/00262 | 1/4 in M BSP x 1/4 in F BSP x Test Point |
| 892/00706 | Test Probe |
| 892/00278 | Gauge 0 - 40 bar (0 - 600 lb/in ²) |
| 892/00279 | Gauge 0 - 400 bar (0 - 6000 lb/in ²) |
| 892/00280 | Gauge 0 - 600 bar (0 - 8500 lb/in ²) |



| | |
|-----------|---------------------------------|
| 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) |
| 816/00018 | 1 in BSP (A) x 1 in BSP (B) |

**Female Cone Blanking Plug**

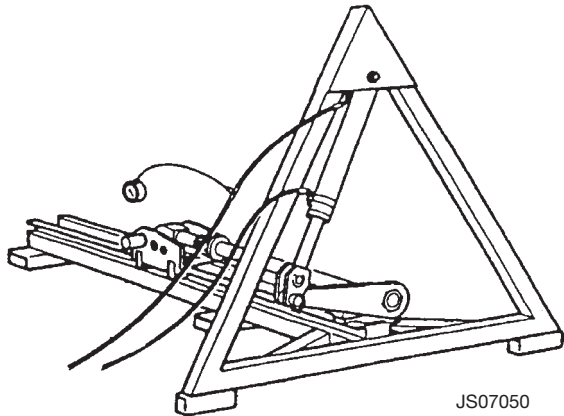
| | |
|-----------|------------|
| 892/00055 | 1/4 in BSP |
| 892/00056 | 3/8 in BSP |
| 892/00057 | 1/2 in BSP |
| 892/00058 | 5/8 in BSP |
| 892/00059 | 3/4 in BSP |
| 892/00060 | 1 in BSP |

**Male Cone Blanking Plug**

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

Service Tools (continued)

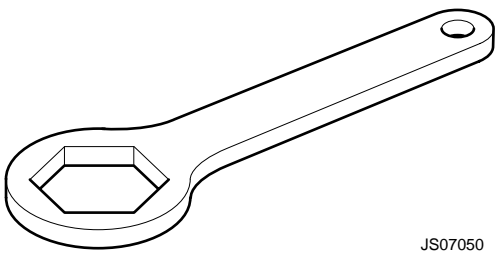
SECTION E - HYDRAULICS



JS07050

Ram Piston Nut Removal/Fitting Rig

| | |
|-----------|---|
| 993/99525 | Rig assembly (not including spanners and ram) |
| 993/99522 | Anchor Side Plate (supplied loose unwelded) |
| 993/99523 | Anchor cross Member (supplied loose unwelded) |
| 993/99524 | Ram Eye End Modification Plate Assembly |
| 556/43400 | Lift Ram |
| 545/18000 | Lynch Pin |
| 811/50232 | 1,1/4 in. Pivot Pin |



JS07050

JS07050

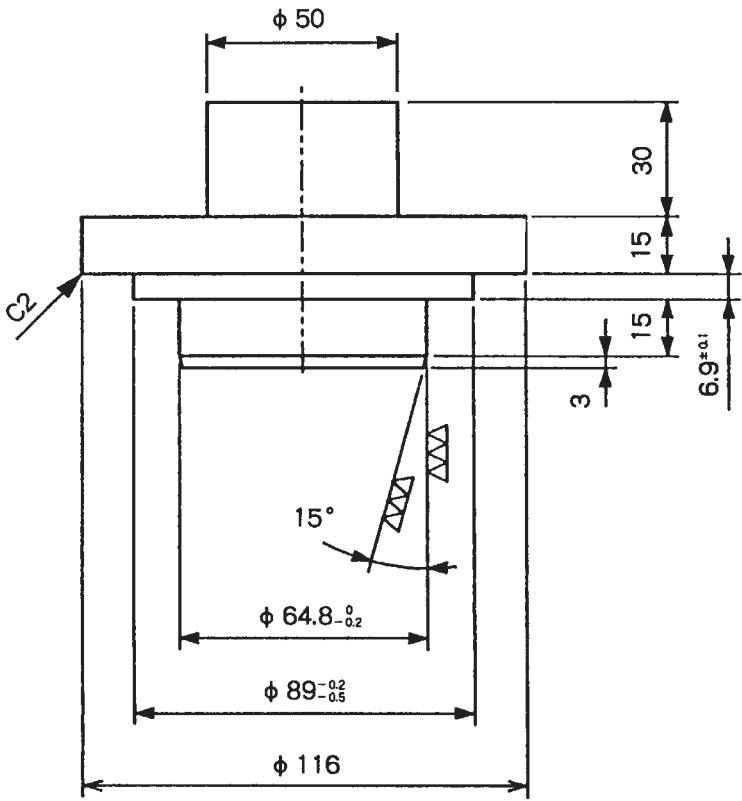
Ram Piston Nut Removal/Fitting Spanner

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

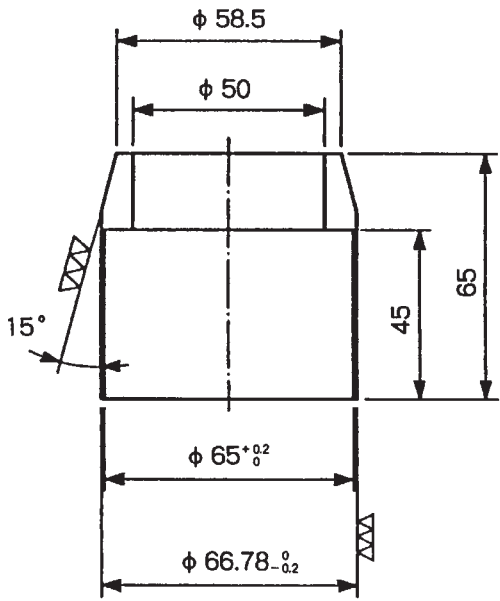
Service Tools (continued)

SECTION E - HYDRAULICS

Seal press-fit jig



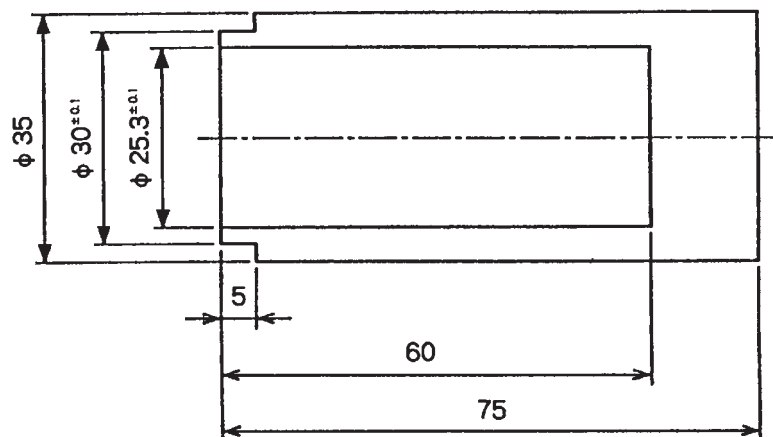
Seal protector



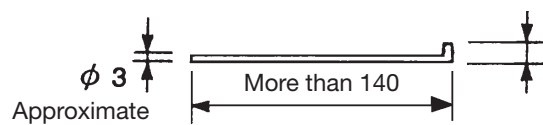
Service Tools (continued)

SECTION E - HYDRAULICS

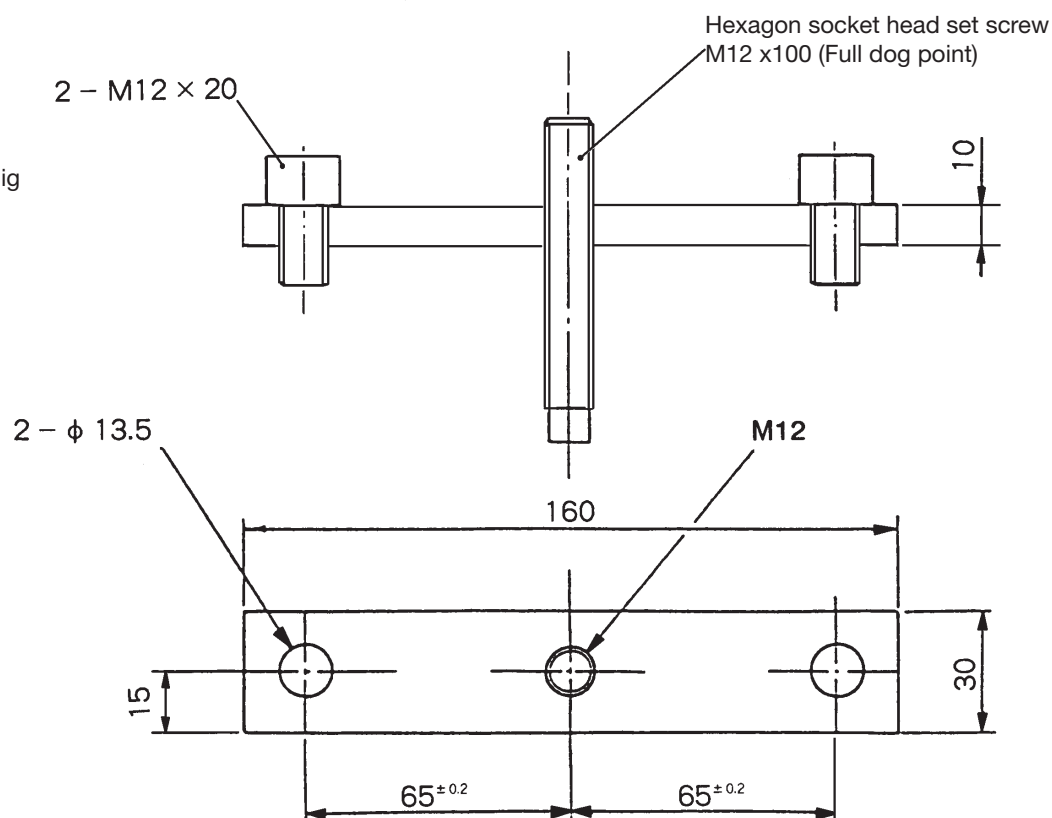
Jig to press fit the taper roller bearing inner rings

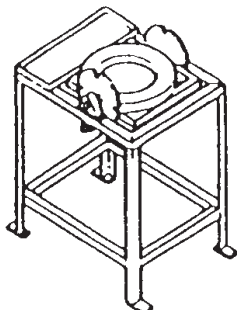


Barrel pulling out jig

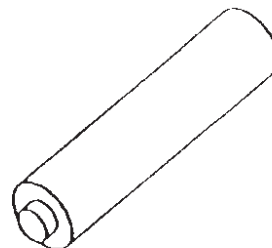
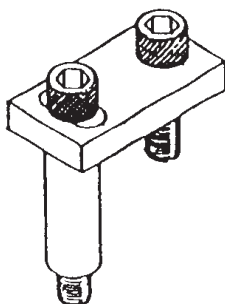


Hanger assembling jig

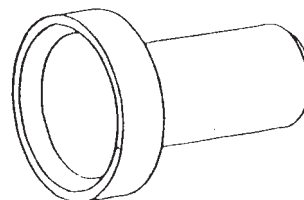
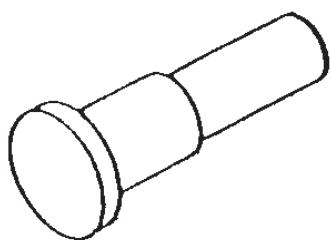
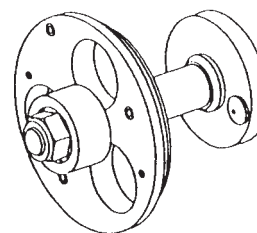


Service Tools (continued)**SECTION F - TRANSMISSIONS**

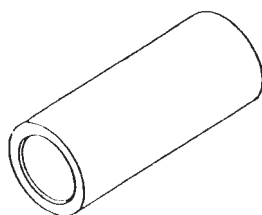
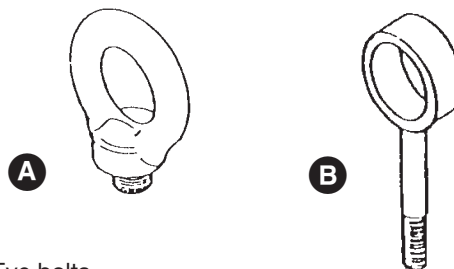
Work Bench

Special tool III
for pressing the oil seal 132 into the spindle.

Hub 1/ spindle 2 Securing jig

Special tool IV
Use to locate the outer race of the bearing 22 and tap to secure the bearing to the crankshaft.Special tool I
To Remove spring 114 from cylinder block 104.
To insert spring 114, washer 110 and snap ring 145 into the cylinder block 104.

Main bearing pre-load adjusting jig.

Special Tool II
For removing the deep groove ball bearing race 149 from shaft 102.Eye bolts
A - Facilitates lifting of cover 8 from hub 1.
B - Use to hoist track gearbox, spindle 2 and hub 1.

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 | |
| JCB High Strength Threadlocker | 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 | |
| JCB Retainer (High Strength) | For all retaining parts which are unlikely to be dismantled. | 4101/0651 | |
| JCB Threadlocker & Sealer | 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. | 4101/0251 | |
| JCB Threadlocker | For threads of 50 mm diameter upwards, e.g. suction strainer. | 4101/0451 | 50 ml |
| JCB Threadlocker & Sealer (High Strength) | A medium to high strength locking fluid. | 4101/0552 | |
| JCB Threadseal | Medium strength thread sealant (for patch bolts that are re-used). | 4102/1951 | 50 ml |
| JCB Activator | A cleaning primer which speeds the curing rate of anaerobic products. | 4104/0251 4104/0253 | Aerosol Bottle |
| JCB Cleaner/Degreaser | For degreasing components prior to use of anaerobic adhesives and sealants. | 4104/1557 | Aerosol |
| Direct Glazing Kit | For one pane of glass, comprises items marked † below plus applicator nozzle etc. | 993/55700 | |
| † Ultra Fast Adhesive | For direct glazing | 4103/2109 | 310 ml |
| † Active Wipe 205 | For direct glazing | 4104/1203 | 250 g |
| † Black Primer 206J | For direct glazing | 4201/4906 | 30 ml |
| Clear Silicone Sealant | To seal butt jointed glass. Also to seal hub planet gear carrier when no 'O' ring is fitted | 4102/0901 | |
| Black Polyurethane Sealant | To finish exposed edges of laminated glass | 4102/2309 | 310 ml |

| Contents | Page No. |
|--------------------|-----------------|
| Safety Notices | 1 - 1 |
| General Safety | 2 - 1 |
| Operating Safety | 3 - 1 |
| Maintenance Safety | 4 - 1 |



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