



# Service Manual

## **JS200**

from machine no. 705001

## **JS210**

from machine no. 705648

## **JS220**

from machine no. 705001

## **JS240**

from machine no. 708001

## **JS260**

from machine no. 708501

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Issue 2

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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.

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## 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 replace if missing.

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

### Tightening Torque Table

No	Tightening Point	Bolt Diameter	Wrench	JS200/210/220/240/260		
				Tighten Torque		
				Nm	kgf m	lbf ft
1†	Travel Motor	M16	24mm	270~310	27.2~31.8	200~230
2†	Drive Sprocket	M16	24mm	270~310	27.2~31.8	200~230
3†	Idler Wheel	M16	24mm	270~310	27.2~31.8	200~230
4†	Upper (Carrier) Roller	M20	30mm	520~608	53.2~62.2	385~450
5†	Lower (Track) Roller	M18	27mm	370~430	37.8~44.1	275~315
6†	Track Guard	M18	27mm	380~440	38.7~45.2	280~325
7	Shoe Bolt	M16	24mm	380~450	38.7~46.0	275~330
8	Counter weight	M27/M30	41/46mm	1058~1235/1335~1545	108~126/136~158	780~910/985~1140
9†	Turntable Bearing (Undercarriage)	M20/M24	30/36mm	475~550/780~910	48.4~55.3/80~93	350~400/575~670
10†	Turntable Bearing (Slew Frame)	M20/M24	30/36mm	475~550/780~910	48.4~55.3/80~93	350~400/575~670
11†	Slew Equipment	M20/M24	30/36mm	525~605/785~910	53.1~62/80~93	390~440/580~670
12†	Engine (Engine Mount)	M16	24mm	265~310	27.0~32	195~230
13†	Engine Bracket	M10	17mm	65~75	6.6~7.6	47~55
14	Radiator	M16	24mm	150~175	15~18	108~130
15†	Hydraulic Pump	M10	17mm	65~75	6.6~7.6	47~55
16†	Hydraulic Oil Tank	M16	24mm	235~285	23.7~29.5	175~210
17†	Fuel Tank	M16	24mm	255~285	25.7~29.5	185~210
18†	Control Valve	M16	24mm	270~310	27.6~31.8	200~230
19†	Rotary Coupling	M12	19mm	110~125	11.1~13	80~94
20	Cab	M16	24mm	127~135	13~14	94~101
21	Battery	M10	17mm	20~30	2.1~2.9	15~21

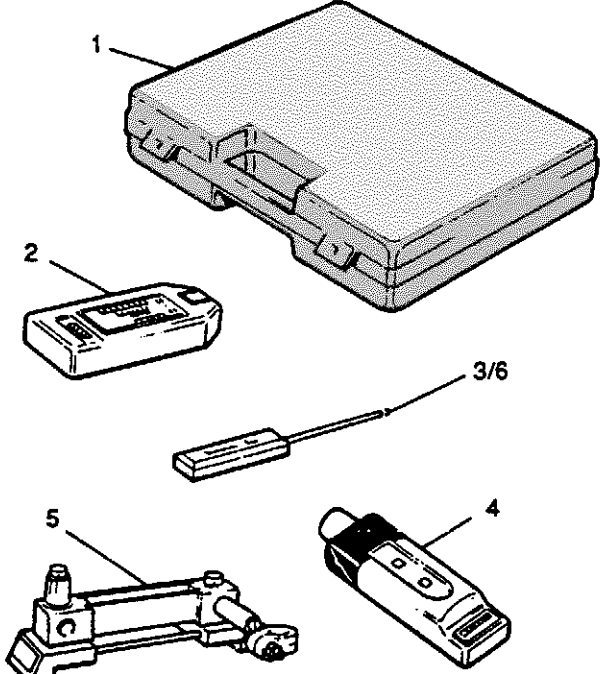
**Note:** Use Loctite 262 (adhesive) on those marked † and tighten to the torque listed in the above table.

The tightening torque for the bolts and nuts not listed above are as follows:

Bolt Diameter (size)			M6	M8	M10	M12	M14	M16	M18	M20
Hex. bolt	Wrench	mm	10	13	17	19	22	24	27	30
	Tightening Torque	Nm	6.9	15.7	32.3	58.8	98.0	137.2	196.0	274.4
		kgf m	0.7	1.6	3.2	5.9	9.8	13.7	19.6	27.4
		lb ft	5	12	24	43	72	101	145	202
Hex. socket head bolt	Wrench	mm	5	6	8	10	12	14	14	17
	Tightening Torque	Nm	8.8	21.6	42.1	78.4	117.6	176.4	245.0	343.0
		kgf m	0.8	2.2	4.2	7.8	11.8	17.6	24.5	34.3
		lb ft	6.5	16	31	58	87	130	181	253

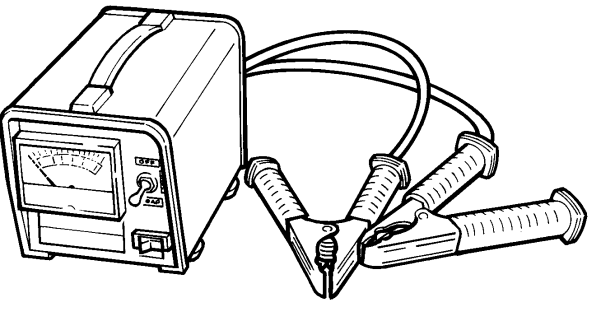
Service Tools

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	Shunt - open type	
6	892/00285	Hydraulic Oil Temperature Probe	
7	892/00298	Fluke 85 Multimeter	



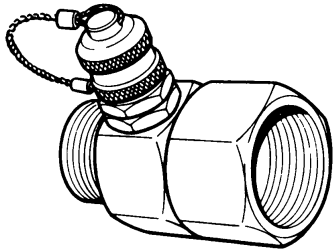
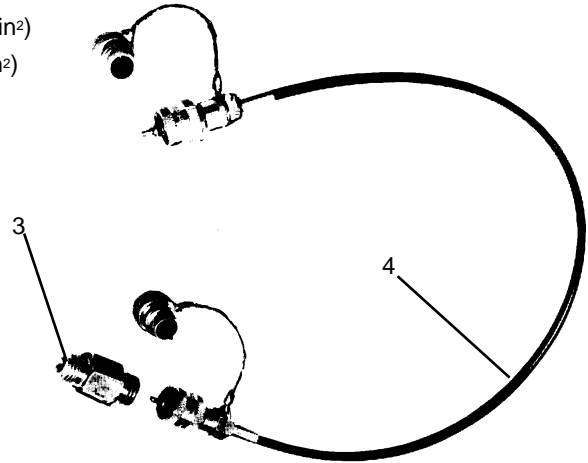
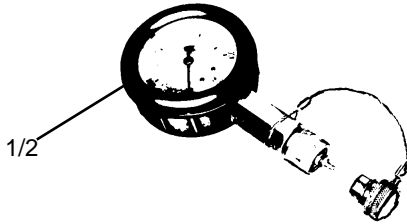
**993/85700**      Battery Tester

**Service Tools (continued)**

**SECTION E - HYDRAULICS**

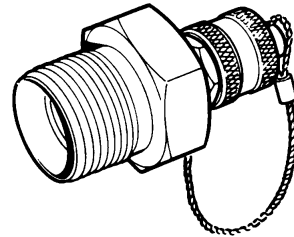
**Hydraulic Pressure Test Gauges and Connections**

- |   |           |                                                        |
|---|-----------|--------------------------------------------------------|
| 1 | 892/00279 | Pressure Gauge 0-400 bar (0-6000 lbf/in <sup>2</sup> ) |
| 2 | 892/00346 | Pressure Gauge 0-70 bar (0-1000 lbf/in <sup>2</sup> )  |
| 3 | 892/00347 | Connector                                              |
| 4 | 892/00254 | Hose                                                   |



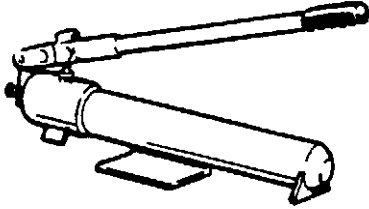
**Pressure Test 'T' Adapters**

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

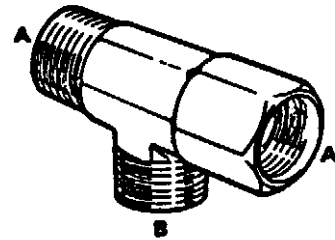


**Pressure Test Adapters**

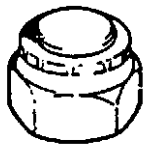
- |           |                           |
|-----------|---------------------------|
| 892/00255 | 1/4 in BSP x Test Point   |
| 892/00256 | 3/8 in BSP x Test Point   |
| 892/00257 | 1/2 in BSP x Test Point   |
| 892/00258 | 5/8 in BSP x Test Point   |
| 816/15118 | 3/4 in BSP x Test Point   |
| 892/00259 | 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**

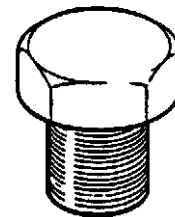
892/00223	Hand Pump
892/00137	Micro-bore Hose 1/4 in BSP x 5 metres
892/00274	Adapter 1/4 in M BSP x 3/8 in M BSP Taper
892/00262	1/4 in M BSP x 1/4 in F BSP x Test Point
892/00706	Test Probe
892/00278	Gauge 0 - 40 bar (0 - 600 lb/in <sup>2</sup> )
892/00279	Gauge 0 - 400 bar (0 - 6000 lb/in <sup>2</sup>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



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**

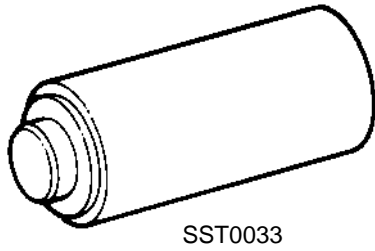
816/00294	1/4 in BSP
816/00189	3/8 in BSP
816/00190	1/2 in BSP
816/00197	5/8 in BSP
816/00196	3/4 in BSP
816/00193	1 in BSP

**Service Tools (continued)**

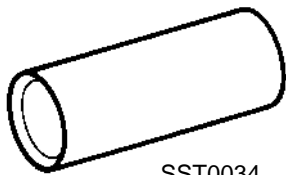
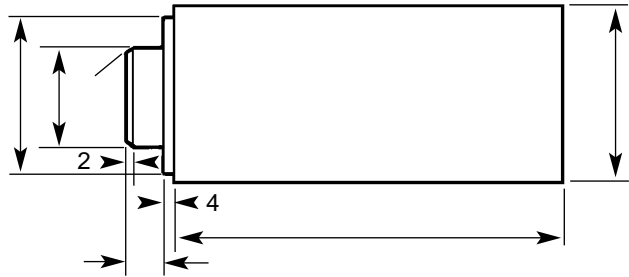
**SECTION E - HYDRAULICS**

**Slew Motor Jig**

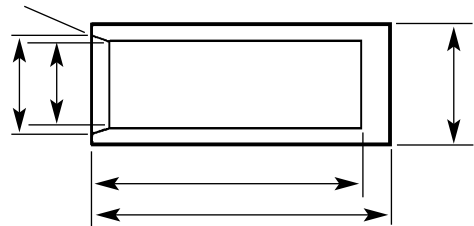
- SST0033 Oil Seal Jig
  - SST0034 Taper Bearing Ring Jig
  - SST0035 Inner Ring Jig
  - SST0036 Seal Press Fit Jig
- (All dimensions are in mm.)



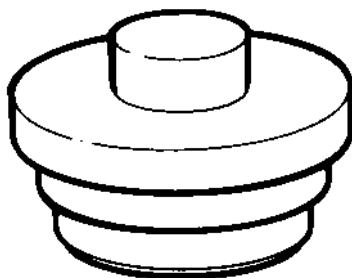
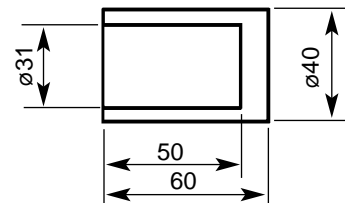
SST0033



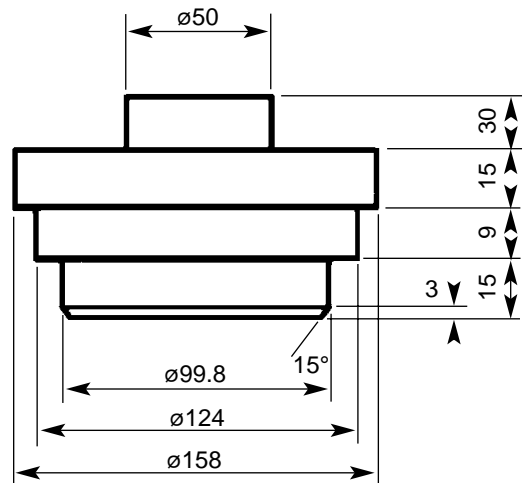
SST0034



SST0035



SST0036





**Service Tools (continued)****SECTION E - HYDRAULICS****Ram Dismantling and Assembly****Ram Piston Head Nut (Rig Assembly - Section E, page 75 - 10)**

Item	Part Number	Description	Quantity
1	993/99525	Rig assembly (not including spanners and ram)	1
2	993/99522	Anchor side plate (supplied loose unwelded)	1
3	993/99523	Anchor cross member (supplied loose unwelded)	1
4	993/99524	Ram eye end modification	1
5	556/43400	Lift ram	1
6	545/18000	Lynch pin	1
7	811/50232	1 1/4 in Pivot pin	1

**Spanner Requirements****JS200/JS200LC/JS220/JS220LC**

993/99518	Bucket ram	90 mm A/F Nut
SSP0047	Boom ram	95 mm A/F Nut
993/99519	Dipper ram	100 mm A/F Nut

**JS240/JS240LC/JS260/JS260LC**

993/99519	Bucket ram	100 mm A/F Nut
993/99519	Boom ram	100 mm A/F Nut
993/99521	Dipper ram	115 mm A/F Nut

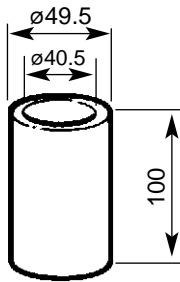
**Note:** All spanners have operating centres of 500 mm.

**Service Tools (continued)**

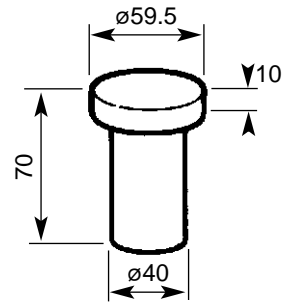
**SECTION F - TRANSMISSION**

**Track Motor Jig**

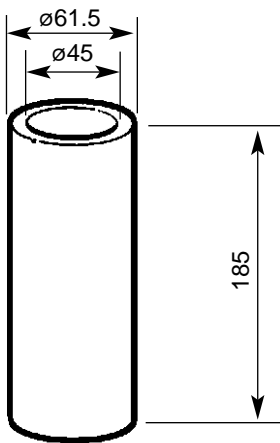
- SST0028 Inner Rail Press Jig
  - SST0029 Snap Ring Jig
  - SST0030 Oil Seal Jig
  - SST0031 Case Fixing Jig
  - SST0032 Bearing Jig
- (All dimensions are in mm.)



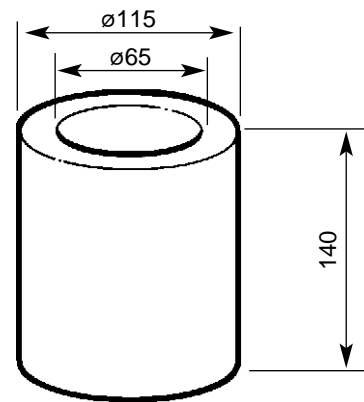
SST0028



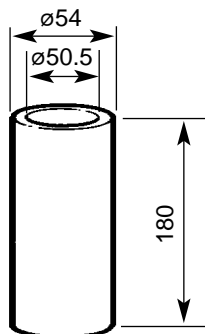
SST0029



SST0030



SST0031



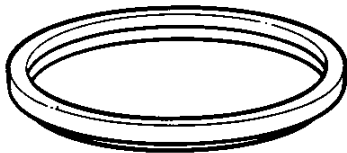
SST0032

**Service Tools (continued)**

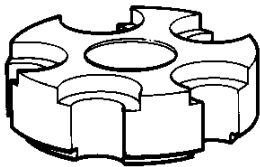
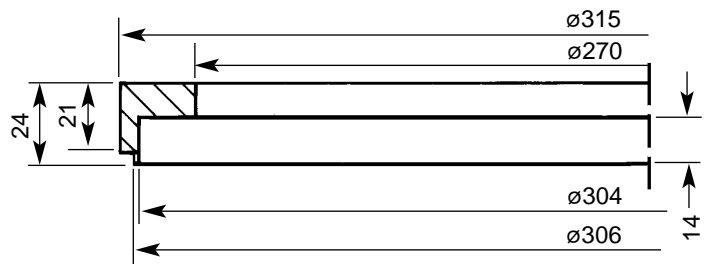
**SECTION F - TRANSMISSION**

**Track Gearbox Jig**

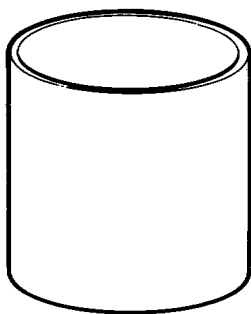
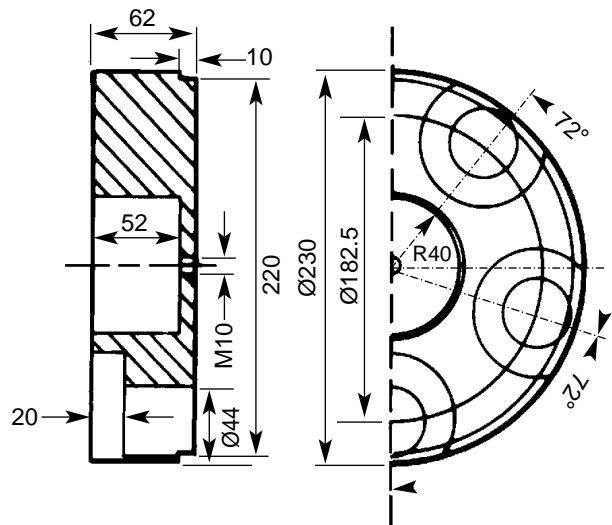
- SST0037 Re-sealing Tool
  - SST0038 Main Bearing Tool
  - SST0039 Main Bearing Tool
- (All dimensions are in mm.)



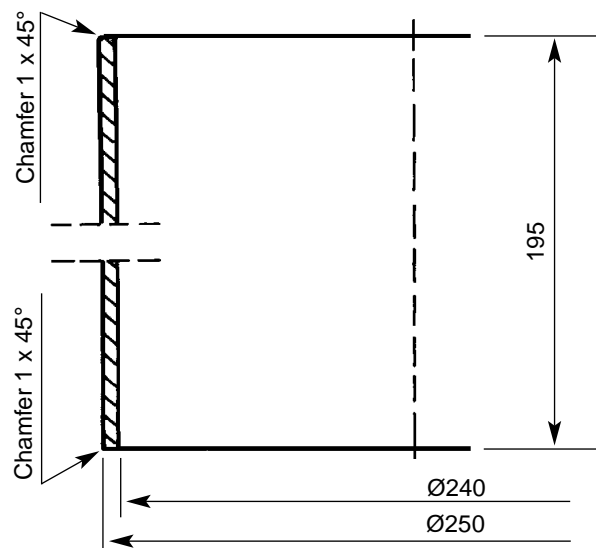
SST0037



SST0038



SST0039

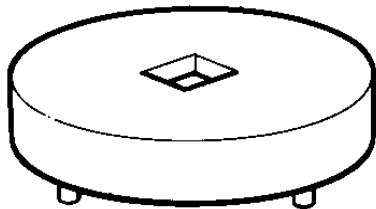


Service Tools (continued)

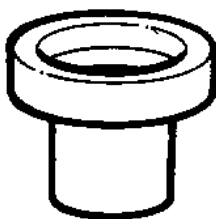
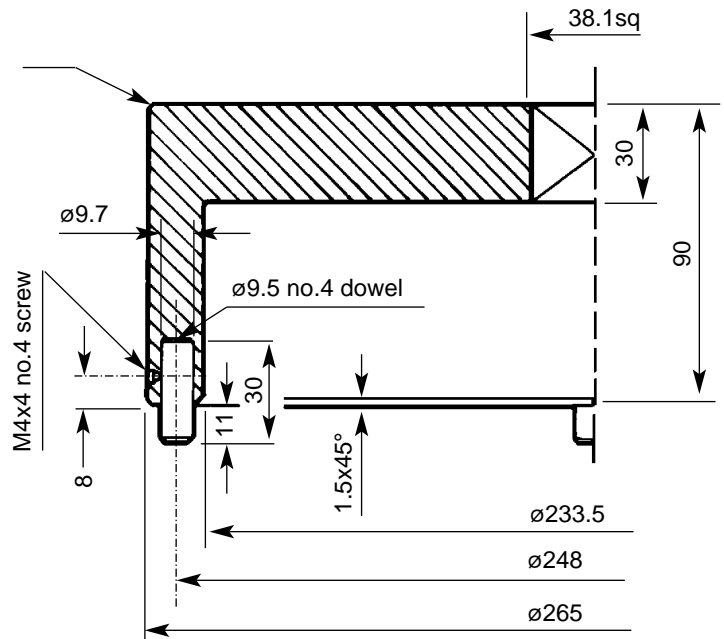
SECTION F - TRANSMISSION

Track Gearbox Jig

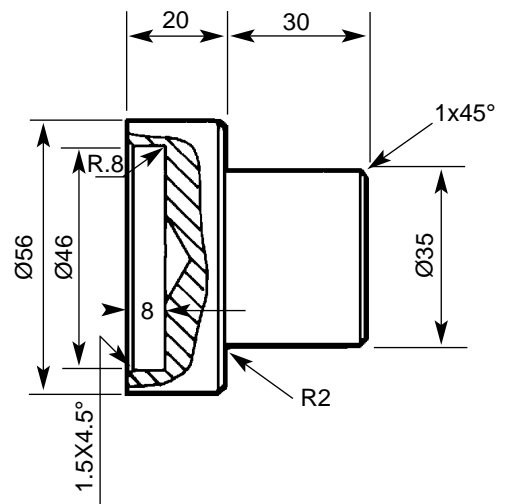
- SST0040 Ring Nut Tool
  - SST0041 Planet Gear Tool
- (All dimensions are in mm.)



SST0040



SST0041



\* **Sealing and Retaining Compounds**

<b>JCB Multi-Gasket</b>	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	50 ml
<b>JCB Threadlocker</b>	For threads of 50 mm diameter upwards, e.g. suction strainer.	4101/0451	50 ml
<b>JCB Threadlocker (High Strength)</b>	A high strength locking fluid for use with threaded components. Gasketing for all sizes of flange where the strength of the joint is important.	4102/0551	50 ml
<b>JCB Retainer (High Strength)</b>	For all retaining parts which are unlikely to be dismantled.	4101/0651	50 ml
<b>JCB Threadlocker and Sealer</b>	A medium strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0250 4101/0251	10 ml 50 ml
<b>JCB Threadlocker and Sealer (High Strength)</b>	A high strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50 mm diameter, and for hydraulic fittings up to 25 mm diameter.	4101/0550 4101/0552	10 ml 200 ml
<b>JCB Threadseal</b>	A medium strength thread sealing compound.	4102/1951	50 ml
<b>JCB Activator</b>	A cleaning primer which speeds the curing rate of anaerobic products.	4104/0251 4104/0253	Aerosol (1 ltr) Bottle (200 ml)
<b>JCB Cleaner/Degreaser</b>	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	Aerosol (400 ml)
<b>Anti-Seize Paste</b>	A compound used for assembly and prevention of parts seizure.	4003/0211	
<b>Direct Glazing Kit</b>	For one pane of glass; comprises items marked † below plus applicator nozzle etc.		
† <b>Ultra Fast Adhesive</b>	For direct glazing	4103/2109	310 ml
† <b>Active Wipe 205</b>	For direct glazing	4104/1203	250 g
† <b>Black Primer 206J</b>	For direct glazing	4201/4906	30 ml
<b>Clear Silicone Sealant</b>	To seal butt jointed glass.	4102/0901	

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