Service Manual

JS Auto Range - Tracked Excavators
JS85

Publication No.
9813/3750-01

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Section 1

General Information

Service Manual - JS Auto Range - Tracked Excavators JS85

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Introduction

Identifying Your Machine

For information about identifying your machine and its main components, refer to ***Section 2, About the Machine, Machine and Component Identification***.

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Safety

Introduction

In this manual and on the machine there are safety notices.

The safety notices have different signal words as follows:

- DANGER
- WARNING
- CAUTION
- Notice

For an explanation of the safety notice signal words, refer to ***Section 2, Introduction, Safety***.

For general safety notices, refer to ***Section 2, Introduction, Safety***.

For maintenance safety notices, refer to ***Section 2, Maintenance, Maintenance Safety***.

For safety notices specific to maintenance procedures, refer to the relevant procedure.

If you do not fully understand a safety notice ask your employer to explain it.

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Use

Introduction

This topic contains information about the structure of the manual and how to use the manual.

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Scope

Personnel

This manual 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. Finally, please remember above all else SAFETY MUST COME FIRST!

Applications

This manual contains data relevant to a range of machines. Make sure you reference the data for the correct machine.

Newest Data

From time to time new machines, systems or devices require the manual to be re-issued. Make sure you have the newest issue.

Always check the on-line JCB data system for relevant technical information.

Format

The manual is compiled in sections, the first two are numbered and contain information as follows:

1 **General Information** - The section includes general information such as torque settings and service tools.

2 **Operator Manual** - The section contains a copy of the applicable machine Operator Manual. Refer to this section when necessary for information about the main machine components and controls. Refer also to the safety and daily / weekly maintenance information.

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

A **Attachments**

B **Body and Framework**...etc.

Each section contains data such as technical data, descriptions, fault finding and test procedures.

Some sections contain **procedures and specifications for different variants**. This happens because of market requirements, or when the machine specification changes after a period of time. Where applicable, a table contains information to help you identify the correct data and procedures.

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.

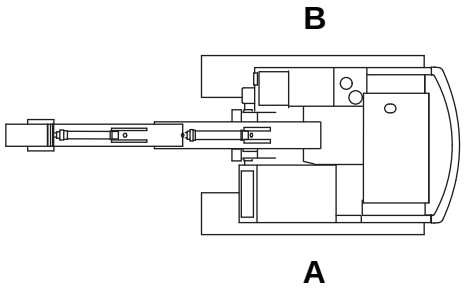

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Fig 1.

Hydraulic Schematic Codes

Colour Codes

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

Red	f: Pressure generated from operation of a service. Depending on application this may be anything between neutral circuit pressure and LSRV operating pressure.
Pink	**Pressure:** Pressure that is above neutral circuit pressure but lower than that denoted by Red.
Orange	**Pilot:** Oil pressure used in controlling a device (Pilot).
Blue	**Neural:** Neutral circuit pressure.
Green	**Exhaust:**
Light Green	**Cavitation:** Oil subjected to a partial vacuum due to a drop in pressure (cavitation).
Yellow	**Lock Up:** Oil trapped within a chamber or line, preventing movement of components (lock up).

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Routine Maintenance

Maintenance Schedules

This publication contains procedures for carrying out the routine maintenance tasks listed on the maintenance schedules. Refer to ***Section 2, Maintenance Schedules***.

The procedures for the daily and weekly (10 and 50 hour) tasks are given in ***Section 2, Maintenance***.

The procedures for the 100 hour and above tasks are given in the related sections of this publication. For example the procedures for engine related tasks are given in Section K.

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General Procedures

Introduction

When work is done on the machine it is important that the correct care is taken. This will help to prevent personal injury and reduce the risk of component failure.

As part of the procedures in this manual you will need to do some general procedures. Two examples of these general procedures are; parking the machine and making it safe, and venting hydraulic pressure.

These procedures are given here as an alternative to again and again in the manual. Where applicable you will see a cross reference to this section so that you can refer to the detailed procedures.

Parking the Machine and Making it Safe

For the correct procedures to park and make the machine safe, refer to ***Section 2, Maintenance, Maintenance Positions***.

Venting the Hydraulic Pressure

⚠ WARNING

Hydraulic Pressure

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

HYD-1-5

For the correct procedures to vent the hydraulic pressure, refer to ***Section 2, Maintenance, Hydraulic System, General, Discharge***.

Connecting/Disconnecting Hydraulic Hoses

WARNING

Hydraulic Pressure

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

HYD-1-5

For the correct procedures to connect/disconnect hydraulic hoses, refer to ***Section 2, Attachments, Connecting/Disconnecting Hydraulic Hoses***.

Battery Disconnection/Connection

For the correct procedures to disconnect/connect the battery, refer to ***Section 2, Maintenance, Electrical System, Battery***.

Removing and Replacing Components

Preparation

Before removing and replacing components do the following:

- To prevent contamination of the machine systems, clean the machines in the area of the applicable components. Refer to ***Section 2, Preservation and Storage, Cleaning the Machine***.
- Make sure that the correct maintenance procedures are available.
- Make sure that the correct tools and equipment are available.
- Make sure that the correct replacement parts, consumables, fluids and lubricants are available.

Original Components

Always Install new oil seals, gaskets, etc.

Components showing obvious signs of wear or damage should be replaced with new ones.

Before re-installing original components do the following:

- Clean components using the applicable cleaning materials.
- Inspect components for signs of excessive wear or defects.
- Check the component specifications such as wear limits where applicable.

New Components

Make sure that the correct new components are installed. Do not substitute components from another machine. Components may look the same but may not be interchangeable. Refer to the JCB parts systems.

Torques and Fixings

When replacing components always tighten the applicable fixings to the correct torque. For the torque setting to be effective do the following before installing the fixings:

- Make sure that all the applicable component assemblies are correct.
- Make sure that the applicable fixings are to the correct specification. If necessary discard the original fixings and replace them with new ones. The relevant procedures indicate when this is necessary.
- Make sure that the applicable fixings and threaded holes are free from contamination. This includes; dirt, debris, old sealants and compounds, fluids and lubricants.

This manual provides reference to the correct torque settings as follows:

- Where no torque setting is given in the applicable procedure, use the standard torque setting. To obtain the correct standard torque setting refer to ***Torque Settings*** in this section.
- Where torque settings are given in the applicable procedure use the settings given. These settings may be different to the standard torque settings in the case of special fixings for example.

Battery Charging System Precautions

Obey the procedures below to prevent damage to the alternator and battery.

- Ensure that the battery negative terminal is connected to the earthing cable.
- Never make or break connections to the battery or alternator, or any part of the charging circuit whilst the engine is running. Disregarding this instruction will result in damage to the regulator or rectifying diodes.
- Main output cables are 'live' even when the engine is not running. Take care not to earth connectors in the moulded plug if it is removed from the alternator.
- When arc welding on the machine, protect the alternator by removing the moulded plug (or if separate output cables fitted, remove the cables).
- Follow the correct procedures when jump starting the engine. Refer to ***Section 2***, ***Operation***, ***Moving a Disabled Machine***.

Gas Hydraulic Bladder Accumulators

Some hydraulic circuits and valve blocks are fitted with gas hydraulic bladder type accumulators.

Before removing accumulators make sure hydraulic pressure is vented. ⇨ *Venting the Hydraulic Pressure (1-15)*

Even when the hydraulic pressure is vented the accumulator still contains pressurised nitrogen gas. DO NOT attempt to discharge the gas pressure.

DO NOT transport accumulators charged with pressurised gas by air freight.

Replacement

Replacement accumulators are generally supplied in a discharged state with no nitrogen gas. A label attached to the accumulator indicates the gas charge state.

Charging

⇨ *Fig 1. (1-20)*

Important: *The following charging procedure is only applicable to accumulators supplied in a discharged state.*

To carry out the charging procedure the following is required:

- Pressurised bottle of nitrogen gas with a suitable pressure reducing valve (**3**).
- Correct gas bottle adaptor depending on territory.
- Charging kit 892/00239. Refer to ***Section 1***.

Operating charge pressures; accumulators are charged to different operating pressures depending on the application. For the correct charge pressure refer to the applicable system specifications.

Before fitting a replacement accumulator charge it with nitrogen gas as follows:

⚠ WARNING

Use only nitrogen gas to charge accumulators. The use of any other gas can cause the accumulators to explode. Remember that although nitrogen is not poisonous you can be killed by suffocation if it displaces the air in your workplace. Do not allow excessive quantities of nitrogen to be discharged into the atmosphere.

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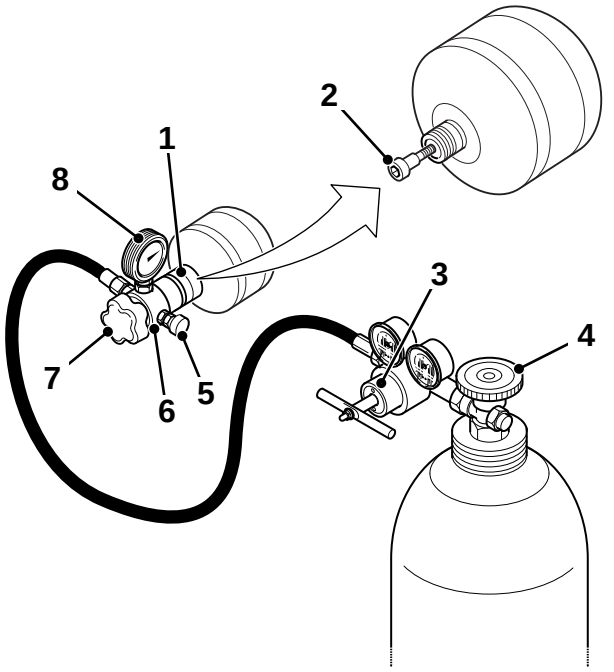

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Fig 1.

1 Hold the accumulator upright and remove the plastic cap from the top of the accumulator.

Note: *Some accumulators are supplied with a measured quantity of oil inside the gas chamber. Take care to prevent oil loss.*

2 Using a suitable allen key, slowly remove the filler plug **2**.

Lightly oil the sealing washer beneath. Replace the washer and plug. Loosen the plug by 1/8 of a turn.

3 Connect the accumulator adaptor **1** (from kit 892/00239) to the accumulator. Connect the charging unit **6** to the accumulator adaptor.

Connect the charging hose to the pressure regulator **3** using the correct adaptor.

Set the pressure regulator **3** to the minimum pressure.

4 Via the charging tool knob **7**, open the filler plug **2** by three turns.

5 Open the discharge valve **5** on the charging unit.

Carefully open the nitrogen gas bottle valve **4** and confirm that the nitrogen gas flows freely.

Shut the gas bottle valve and the discharge valve **5**.

6 Carefully open the gas bottle valve. Slowly increase the pressure using the gas bottle pressure regulator and watching the gauge **8** on the charging unit, allow nitrogen to flow until the pressure reading reaches 4 bar (72.5 psi) ABOVE the operating charge pressure.

Important: *DO NOT exceed the maximum working pressure of the accumulator. The maximum working pressure is marked on the accumulator body.*

Close the gas bottle valve.

7 Wait 10 minutes to dissipate the heat generated during charging.

8 Reduce the pressure in the accumulator to the specified operating charge pressure by carefully opening and closing the discharge valve **5**. Turn the knob **7** to shut the filler plug **2** and tighten to a torque of 20 Nm (15 lb ft).

9 Release the pressure from the charging hose by opening the discharge valve **5**.

Disconnect the charging unit and adaptor from the accumulator.

10 Check the gas-tightness of filler plug **2** by pouring some oil around it.

11 Replace the plastic cap.

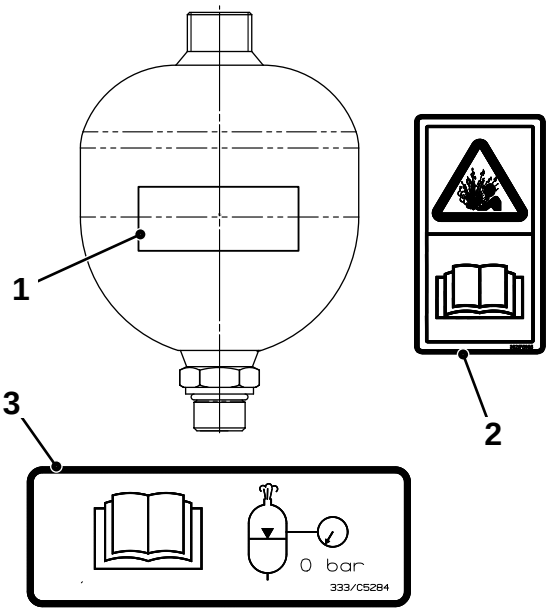

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Fig 2.

12 ⇨ *Fig 2. (1-21)* Remove the discharged state label **3** and attach the pressurised warning label **2** at position **1** on the accumulator.

Install the accumulator and make sure the pressurised warning label is clearly visible.

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Service Consumables

Introduction

Consumables such as sealing and retaining compounds are necessary to complete some procedures. Before you start work make sure that the consumables show in the tables are available.

⇨ *Sealing and Retaining Compounds (1-24)*

Sealing and Retaining Compounds

T11-001_4

Table 1.

Type	Description	Part No.	Quantity
JCB Multi-Gasket	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	50 ml
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	50 ml
JCB Retainer (High Strength)	For all retaining parts which are unlikely to be dismantled.	4101/0601	10 ml
		4101/0651	50 ml
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	10 ml
		4101/0251	50 ml
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	10 ml
		4101/0552	200 ml
JCB Threadseal	A medium strength thread sealing compound.	4102/1951	50 ml
JCB Activator	A cleaning primer which speeds the curing rate of anaerobic products.	4104/0251	200 ml (Aerosol)
		4104/0253	1 ltr (Bottle)
JCB Cleaner/Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	4104/1557	400 ml (Aerosol)
Direct Glazing Kit	For one pane of glass; comprises of: – 1 x Ultra Fast Adhesive (310 ml) – 1 x Active Wipe 205 (30 ml) – 1 x Black Primer 206J (30 ml) – 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 ml
Black Primer 206J	For direct glazing.	4201/4906	30 ml
Clear Silicone Sealant	To seal butt jointed glass.	4102/0901	
Plastic to Metal Bonder	To seal plastic to metal joints.	4103/0956	50 g
Black Polyurethane Sealant	To finish exposed edges of laminated glass.	4102/2309	310 ml

Table 2.

Torque Settings

Introduction

This topic contains information about torques. Torque values are given for types and sizes of bolts and hydraulic connectors and adaptors.

Where a torque is given as a single figure it may be varied by plus or minus 3%. Torque figures are given for fasteners with different surface treatments. Make sure you use the correct torque figures.

Where torques are given in topics within the other sections always use these values.

⇨ *Zinc Plated Fasteners and Dacromet Fasteners (1-26)*

⇨ *Hydraulic Connections (1-30)*

⇨ *`Positional Type' Hydraulic Adaptors (1-34)*

⇨ *Fitting Procedure (1-34)*

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 (1-26)*.

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

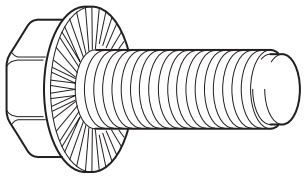

Fig 1.

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

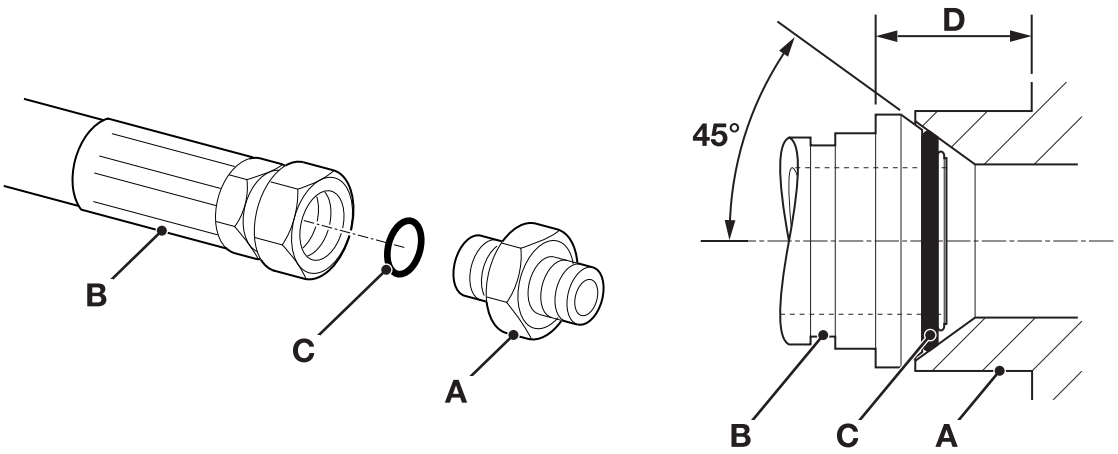

Fig 2.

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

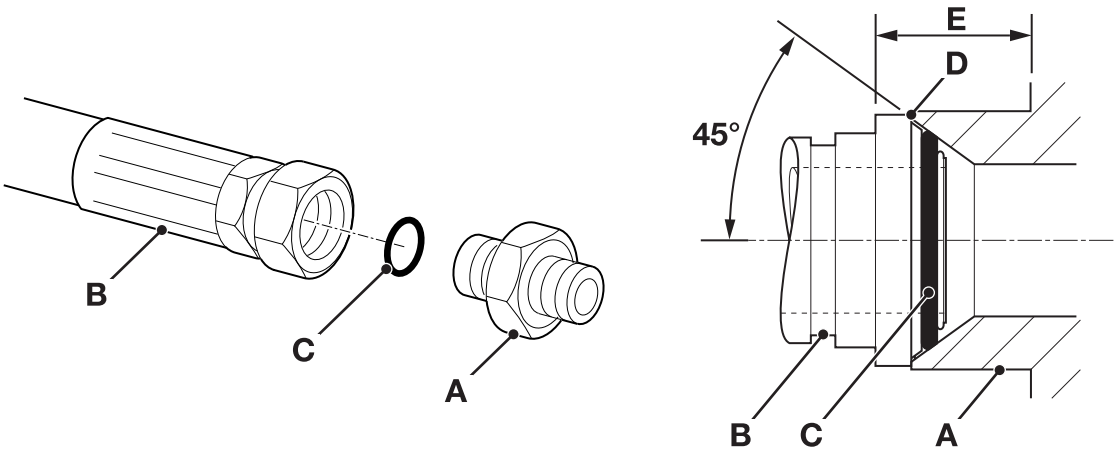

Fig 3.

`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

`Positional Type' Hydraulic Adaptors

Fitting Procedure

On a typical machine, some hydraulic components may utilise `Positional Type' SAE Hydraulic Adaptors. When fitting `Positional Type' Hydraulic Adaptors it is important to adopt the following procedure. If this procedure is not followed correctly, damage to the `O' ring seal **4-A** can occur resulting in oil leaks.

1 Ensure the locknut **4-B** is screwed back onto the body of the adaptor as far as possible as shown.

2 Check the `O' ring backing washer **4-C** is a tight fit on the adaptor. Note that the washer should not move freely, if the washer is slack do not use the adaptor.

3 Check the `O' ring **4-A** is fitted and that it is free from damage or nicks. Before fitting the adaptor, smear the `O' ring with clean hydraulic fluid.

Note: *The dimensions and shore hardness of the `O' ring is critical. Should it become necessary to replace the `O' ring, ensure that only JCB Genuine Parts are used.*

4 Screw the adaptor into the port of the hydraulic component as far as possible, so that ALL the threads engage and the `O' ring is correctly seated against the sealing face.

5 Set the angular position of the adaptor as required, then secure by tightening the locknut **4**-**B**.

Note: *When fitted correctly no more than one thread should be visible at **5-Z** as shown.*

6 Torque tighten the locknut to 81 Nm (60 lbf ft).

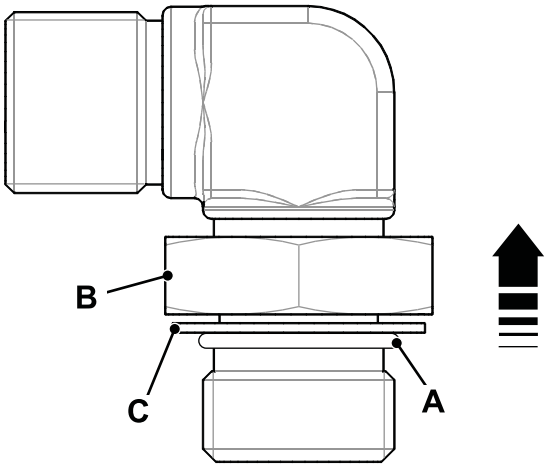

Fig 4.

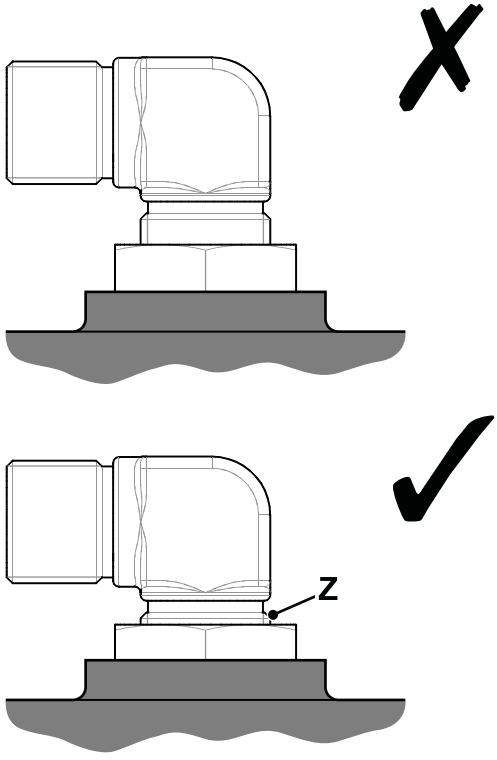

Fig 5.

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
-	Bonded Washers - see ***Tool Detail Reference (Section 1)*** for content
-	Female Cone Blanking Caps - see ***Tool Detail Reference (Section 1)*** for content
-	Female Connectors - see ***Tool Detail Reference (Section 1)*** for content
-	Hydraulic Flow Test Equipment - see ***Tool Detail Reference (Section 1)*** for content
-	Male Adapters - BSP x BSP - see ***Tool Detail Reference (Section 1)*** for content
-	Male Adapters - BSP x NPT (USA only) - see ***Tool Detail Reference (Section 1)*** for content
-	Male Cone Blanking Caps - see ***Tool Detail Reference (Section 1)*** for content
-	Pressure Test Points - Adaptors - see ***Tool Detail Reference (Section 1)*** for content
-	Pressure Test Points - 'T' Adaptors - see ***Tool Detail Reference (Section 1)*** for content
-	Rivet Nut Tool - see ***Tool Detail Reference (Section 1)*** for content
4104/1310	Hand Cleaner
892/00253	Hydraulic Circuit Pressure Test Kit - see ***Tool Detail Reference (Section 1)*** for content
892/00254	Hose
892/00279	Gauge
892/00280	Gauge
892/00284	Digital Tachometer
892/00285	Hyd. Oil Temperature Probe
892/00298	Fluke Meter
892/00346	Gauge
892/00347	Connector
892/01246	Vibromax male to JCB female threaded adaptor
892/01247	JCB male to Vibromax female threaded adaptor
892/12345	Frequency and Vibration Measuring Tool
993/68100	Slide Hammer Kit - see ***Tool Detail Reference (Section 1)*** for content
892/00285	100 amp Shunt

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