

JCB 7000 Series Fastrac

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Publication No.
9803/8060-3



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Notes:



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Section 1 - General Informtion

Contents

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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:

Fastrac 7170, 7200 and 7230 P-TRONIC machines from serial number 1350000.

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!

Units of Measurement

T11-001_2

In this publication, the S.I. system of units is used. For example, liquid capacities are given in litres. The Imperial units follow in parentheses () eg 28 litres (6 gal).

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.

Identifying your Machine

Machine Identification Plate

Your machine has an identification plate mounted as shown. The serial numbers of the machine and its major units are stamped on the plate.

Note: The machine model and build specification is indicated by the PIN. Refer to **Typical Product Identification Number (PIN)**.

The serial number of each major unit is also stamped on the unit itself. If a major unit is replaced by a new one, the serial number on the identification plate will be wrong. Either stamp the new number of the unit on the identification plate, or simply stamp out the old number. This will prevent the wrong unit number being quoted when replacement parts are ordered.

The machine and engine serial numbers can help identify exactly the type of equipment you have.

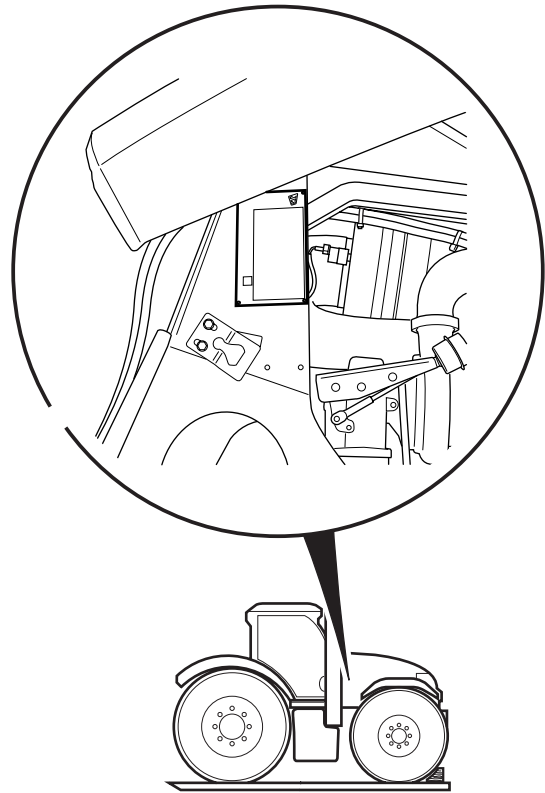
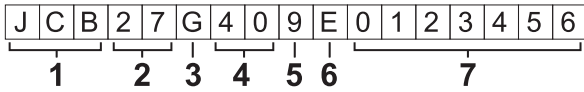


Fig 1.

C072450

Typical Product Identification Number (PIN)



T040900

Fig 2.

1 World Manufacturer Identification (3 Digits)

2 Engine Type (2 Digits)

27 = QSB 6.7 230Hp (7230)

28 = QSB 6.7 200Hp (7200)

29 = QSB 6.7 173Hp (7170)

30 = QSB 6.7 260Hp (7270)

3 Transmission Type (1 Digit)

G = P-TRONIC Transmission

4 Vehicle Maximum Speed kph (2 Digits)

40 = 40kph

5 Check Letter (1 Digit)

The Check Letter is used to verify the authenticity of the machine's PIN.

6 Year of Manufacture (1 Digit)

7 = 2007

A = 2010

8 = 2008

B = 2011

9 = 2009

C = 2012

7 Machine Serial Number (7 Digits)

Each machine has a unique serial number.

Component Identification Plates

Engine Identification Number

The data plate label **A** contains important information and includes the engine identification number.

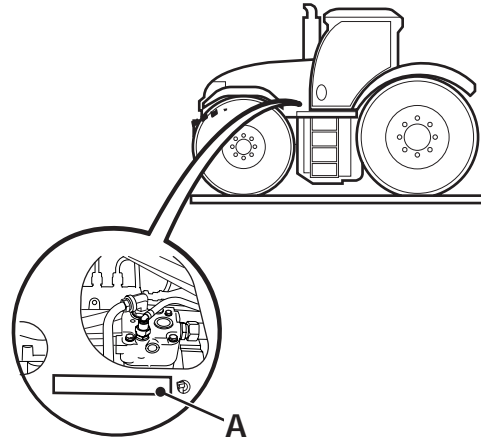


Fig 3.

C072510

Transmission Identification Numbers

Gearbox

The gearbox has a serial number stamped on a data plate label **B** as shown.

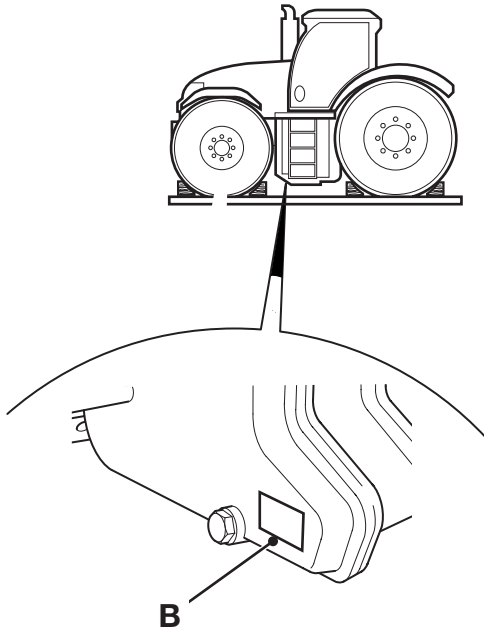


Fig 4.

C056890-B3

Axes

The axles have a serial number stamped on a data plate label **C** as shown.

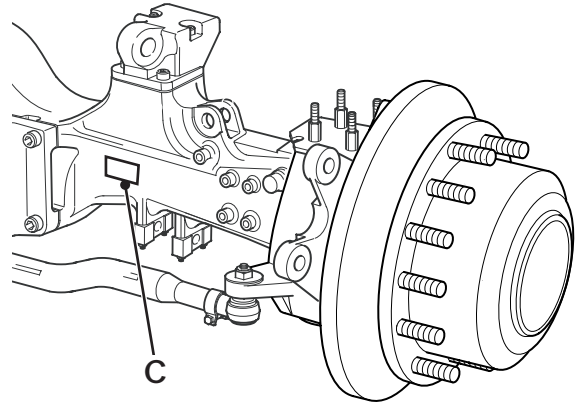


Fig 5. Front Axle

C071430

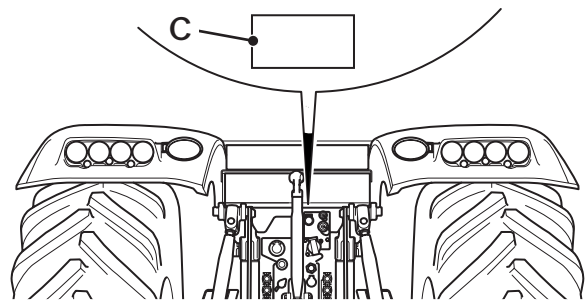


Fig 6. Rear Axle

C075410-B17

ROPS Certification Label

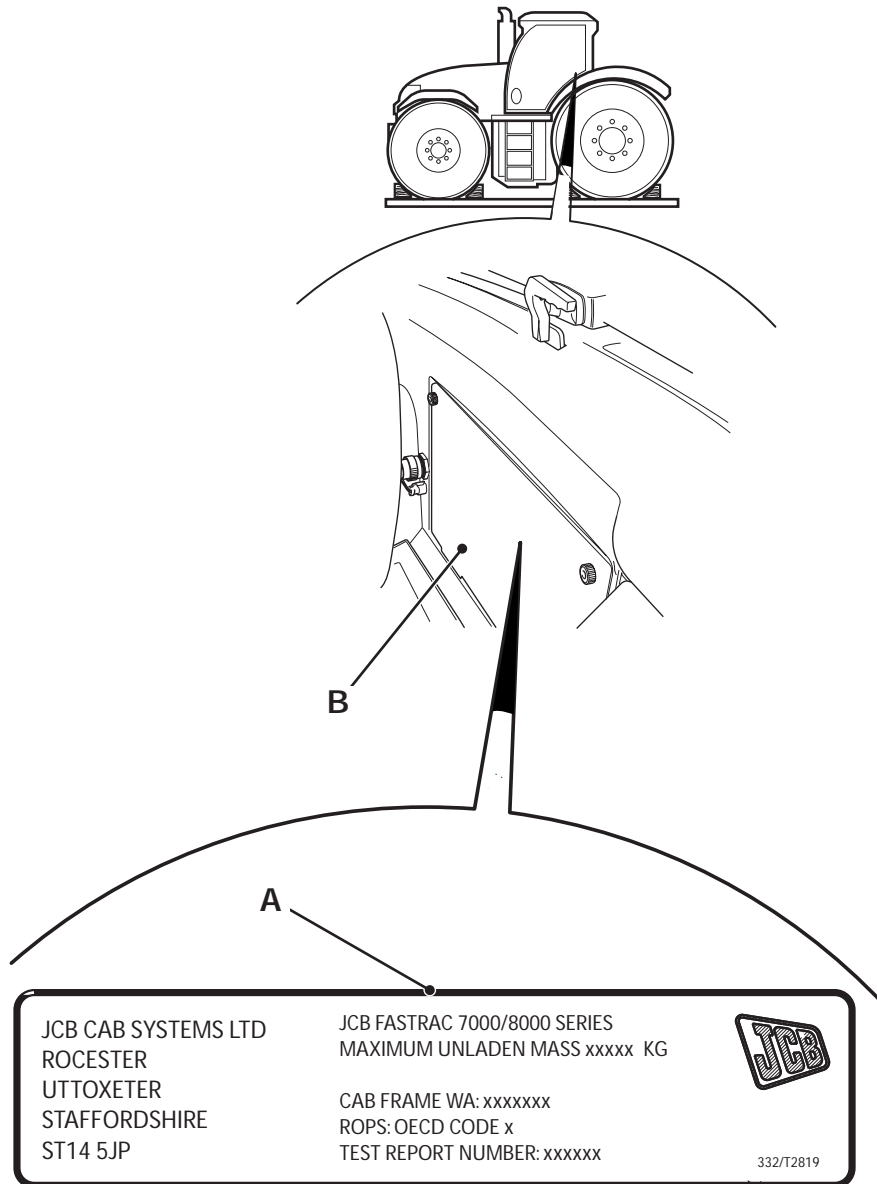


Fig 7.

C071600

Machines built with Roll Over Protection Structure (ROPS) have identification label **A** located behind panel **B** inside the cab.

Standard Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

Introduction

Some external fasteners on Fastrac machines are assembled 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 as follows:

Fastener Type	Colour	Part Number
Zinc and Yellow	Golden finish	Z (e.g. 1315/3712Z)
Dacromet	Mottled silver finish	D (e.g. 1315/3712D)

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 fasteners.

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

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 and engine joint seams or internal applications.

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

Zinc Plated Fasteners (golden finish)

Use the values on these pages only where no torque setting is specified in the text. Values are for dry threads and may be within three per cent of the figures stated. For lubricated threads the values should be REDUCED by one third.

Metric Grade 8.8 Bolts

Size			Torque Settings		
			Nm	kgf m	lbf ft
Diameter (mm)	Hexagon (mm)	(A/F) mm			
M5	(5)	8	7	0.7	5
M6	(6)	10	12	1.2	9
M8	(8)	13	28	3.0	21
M10	(10)	17	56	5.7	42
M12	(12)	19	98	10	72
M16	(16)	24	244	25	180
M18	(18)	27	350	36	258
M20	(20)	30	476	48	352
M24	(24)	36	822	84	607
M30	(30)	46	1633	166	1205
M36	(36)	55	2854	291	2105

Metric Grade 10.9 Bolts

Size			Torque Settings		
			Nm	kgf m	lbf ft
Diameter (mm)	Hexagon (mm)	(A/F) mm			
M6	(6)	8	16	1.6	12
M8	(8)	13	39	4	29
M10	(10)	17	78	8	57
M12	(12)	19	137	14	101
M16	(16)	24	343	35	253
M20	(20)	30	657	67	485
M24	(24)	36	1157	118	853

Metric - All Internal Hexagon Headed Cap Screws

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

Verbus Ripp Bolts

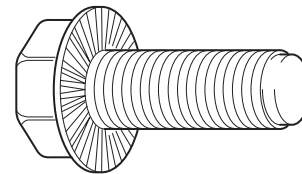


Fig 8.

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



Section 1 - General Information Standard Torque Settings

Zinc Plated Fasteners and Dacromet Fasteners

Dacromet Fasteners (mottled silver finish)

Use the values on these pages only where no torque setting is specified in the text.

Note: Dacromet fasteners are lubricated as part of the plating process. Do not lubricate

Metric Grade 8.8 Bolts

Bolt size	Torque Settings		
	Nm	kgf m	lbf ft
Dia.			
M6 x 1.0	9	0.9	7
M8 x 1.25	22.5	2.3	17
M10 x 1.5	47.5	4.8	35
M12 x 1.75	80	8.2	59
M14 x 2	133	13.6	98
M16 x 2	200	20.4	148
M18 x 2.5	278	28.4	205
M20 x 2.5	392	40	289
M24 x 3	675	69	498
M30 x 3.5	1348	138	994

Metric Grade 10.9 Bolts

Bolt size	Torque Settings		
	Nm	kgf m	lbf ft
Dia.			
M6 x 1.0	13.5	1.4	10
M8 x 1.25	35	3.6	26
M10 x 1.5	62.5	6.4	46
M12 x 1.75	115	11.7	85
M14 x 2	175	17.9	129
M16 x 2	300	30.6	221
M18 x 2.5	395	40	291
M20 x 2.5	559	57	412
M24 x 3	962	98	710
M30 x 3.5	1920	196	1416

Metric Grade 12.9 Bolts

Bolt size	Torque Settings		
	Nm	kgf m	lbf ft
Dia.			
M6 x 1.0	15	1.5	11
M8 x 1.25	40	4.1	29
M10 x 1.5	80	8.2	59
M12 x 1.75	133	13.6	98
M14 x 2	225	23	166
M16 x 2	350	35.7	258
M18 x 2.5	463	47	342
M20 x 2.5	654	67	482
M24 x 3	1125	115	830
M30 x 3.5	2247	229	1657

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 1. Torque Settings - BSP Adaptors

BSP Adaptor Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	mm			
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 2. Torque Settings - SAE Connections

SAE Tube Size	SAE Port Thread Size	Hexagon (A/F)	Nm	kgf m	lbf ft
		mm			
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

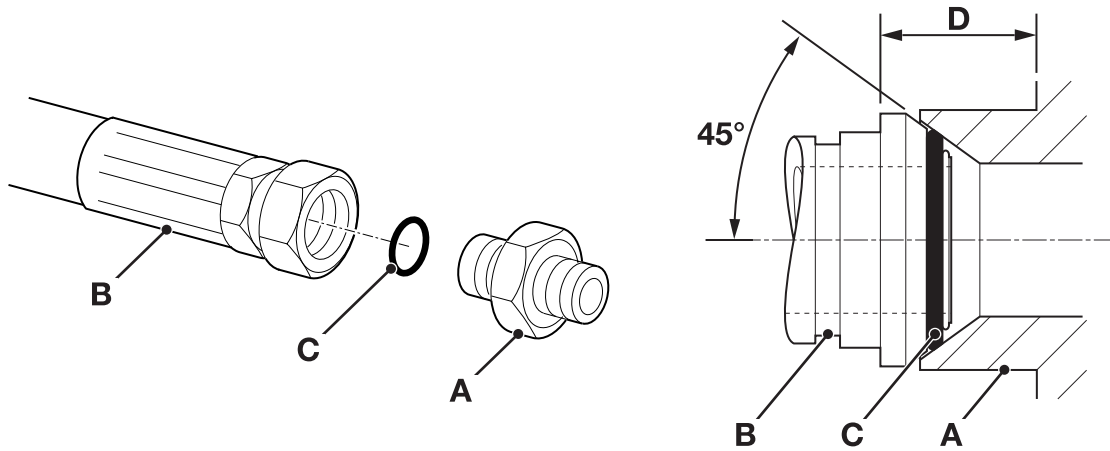


Fig 9.

Hoses **9-B** screwed into adaptors **9-A** seal onto an 'O' ring **9-C** which is compressed into a 45° seat machined into the face of the adaptor port.

Note: Dimension **9-D** will vary depending upon the torque applied.

Table 3. BSP Hose - Torque Settings

BSP Hose Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	in.			
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 4. 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

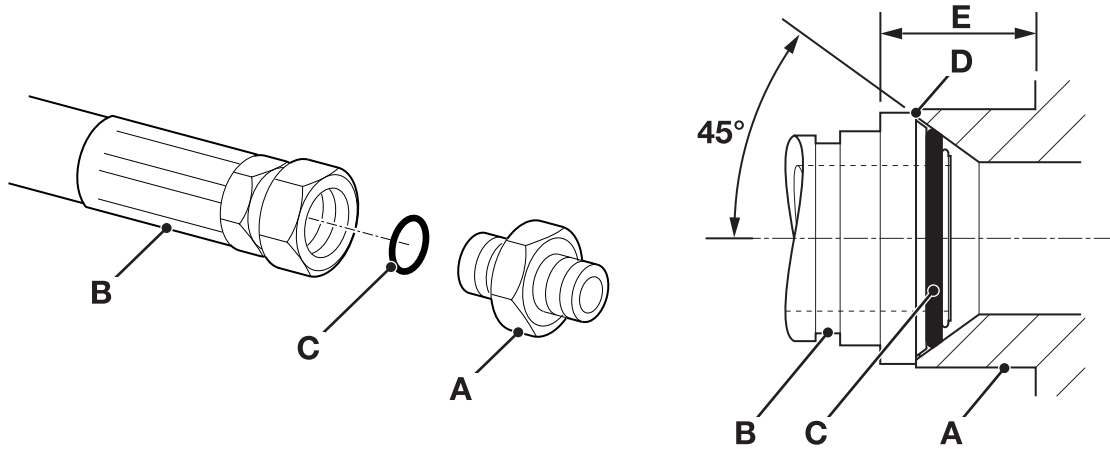


Fig 10.

'Torque Stop' Hoses **10-B** screwed into adaptors **10-A** seal onto an 'O' ring **10-C** which is compressed into a 45° seat machined in the face of the adaptor port. To prevent the 'O' ring being damaged as a result of over tightening, 'Torque

Stop' Hoses have an additional shoulder **10-D**, which acts as a physical stop.

Note: Minimum dimension **10-E** fixed by shoulder **10-D**.

Table 5. BSP 'Torque Stop' Hose - Torque Settings

BSP Hose Size	Hexagon (A/F)	Nm	kgf m	lbf ft
	in.			
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

Table 6.

Special Tools

Numerical List

The tools listed in the table are special tools required for removal and replacement of Body and Framework parts. These tools are available from JCB Service.

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	Tool Detail Reference
1406/0011	Bonded Washer	⇒ Fig 48. (□ 1-28)
1406/0014	Bonded Washer	⇒ Fig 48. (□ 1-28)
1406/0018	Bonded Washer	⇒ Fig 48. (□ 1-28)
1406/0021	Bonded Washer	⇒ Fig 48. (□ 1-28)
1406/0029	Bonded Washer	⇒ Fig 48. (□ 1-28)
1604/0003A	Adapter	⇒ Fig 41. (□ 1-27)
1604/0004A	Adapter	⇒ Fig 41. (□ 1-27)
1604/0006A	Adapter	⇒ Fig 49. (□ 1-29)
1604/2055	Adapter	⇒ Fig 41. (□ 1-27)
1606/0004	Adapter	⇒ Fig 41. (□ 1-27)
1606/0007A	Adapter	⇒ Fig 41. (□ 1-27)
1606/0008	Adapter	⇒ Fig 41. (□ 1-27)
1606/0009	Adapter	⇒ Fig 41. (□ 1-27)
1606/0012	Adapter	⇒ Fig 41. (□ 1-27)
1606/0014	Adapter	⇒ Fig 41. (□ 1-27)
1606/0015	Adapter	⇒ Fig 41. (□ 1-27)
1606/0016	Adapter	⇒ Fig 41. (□ 1-27)
1606/0017	Adapter	⇒ Fig 41. (□ 1-27)
1606/2052	Adapter	⇒ Fig 41. (□ 1-27)
1612/2054	Adapter	⇒ Fig 49. (□ 1-29)
4104/1310	Hand Cleaner	⇒ Fig 14. (□ 1-19)
816/00017	Adapter	⇒ Fig 44. (□ 1-28)
816/00189A	Blanking Cap	⇒ Fig 46. (□ 1-28)
816/00190A	Blanking Cap	⇒ Fig 46. (□ 1-28)
816/00439	Adapter	⇒ Fig 41. (□ 1-27)
816/00440	Adapter	⇒ Fig 41. (□ 1-27)
816/15007A	Adapter	⇒ Fig 41. (□ 1-27)
816/15008	Adapter	⇒ Fig 41. (□ 1-27)



Section 1 - General Information Special Tools

Numerical List

Part Number	Description	Tool Detail Reference
816/15118	Adapter	⇒ Fig 42. (□ 1-27)
816/20008	Adapter	⇒ Fig 49. (□ 1-29)
816/20013	Adapter	⇒ Fig 49. (□ 1-29)
816/50005	Adapter	⇒ Fig 44. (□ 1-28)
816/50043	Adapter	⇒ Fig 44. (□ 1-28)
816/55038	Adapter	⇒ Fig 43. (□ 1-27)
816/55040	Adapter	⇒ Fig 43. (□ 1-27)
816/55045	Adapter	⇒ Fig 43. (□ 1-27)
816/60096	Adapter	⇒ Fig 44. (□ 1-28)
816/90022	Blanking Cap	⇒ Fig 46. (□ 1-28)
816/90045	Blanking Cap	⇒ Fig 46. (□ 1-28)
816/90205	Blanking Cap	⇒ Fig 46. (□ 1-28)
816/90274	Blanking Cap	⇒ Fig 46. (□ 1-28)
826/01099	Rivet Nut	⇒ Fig 12. (□ 1-17)
826/01101	Rivet Nut	⇒ Fig 12. (□ 1-17)
826/01102	Rivet Nut	⇒ Fig 12. (□ 1-17)
826/01103	Rivet Nut	⇒ Fig 12. (□ 1-17)
826/01104	Rivet Nut	⇒ Fig 12. (□ 1-17)
826/01105A	Rivet Nut	⇒ Fig 12. (□ 1-17)
892/00047	Adapter	⇒ Fig 44. (□ 1-28)
892/00048	Adapter	⇒ Fig 44. (□ 1-28)
892/00049	Adapter	⇒ Fig 44. (□ 1-28)
892/00055A	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00056A	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00057	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00058A	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00059A	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00060	Blanking Cap	⇒ Fig 45. (□ 1-28)
892/00051	Adapter	⇒ Fig 44. (□ 1-28)
892/00074	Connector	⇒ Fig 47. (□ 1-28)
892/00075	Connector	⇒ Fig 47. (□ 1-28)
892/00076	Connector	⇒ Fig 47. (□ 1-28)
892/00077	Connector	⇒ Fig 47. (□ 1-28)
892/00078	Connector	⇒ Fig 49. (□ 1-29)
892/00137	Hose	⇒ Fig 54. (□ 1-31)
892/00201	Replacement Gauge	⇒ Fig 51. (□ 1-30)
892/00202	Replacement Gauge	⇒ Fig 51. (□ 1-30)



Section 1 - General Information Special Tools

Numerical List

Part Number	Description	Tool Detail Reference
892/00203	Replacement Gauge	⇒ Fig 51. (□ 1-30)
892/00223	Hand Pump	⇒ Fig 54. (□ 1-31)
892/00254	Replacement Hose	⇒ Fig 53. (□ 1-30)
892/00255	Adapter	⇒ Fig 42. (□ 1-27)
892/00256	Adapter	⇒ Fig 42. (□ 1-27)
892/00257	Adapter	⇒ Fig 42. (□ 1-27)
892/00258	Adapter	⇒ Fig 42. (□ 1-27)
892/00259	Adapter	⇒ Fig 42. (□ 1-27)
892/00260	Adapter	⇒ Fig 42. (□ 1-27)
892/00261	Adapter	⇒ Fig 42. (□ 1-27)
892/00262	Adapter	⇒ Fig 54. (□ 1-31)
892/00263	Adapter	⇒ Fig 43. (□ 1-27)
892/00264	Adapter	⇒ Fig 43. (□ 1-27)
892/00265	Adapter	⇒ Fig 43. (□ 1-27)
892/00266	Adapter	⇒ Fig 43. (□ 1-27)
892/00267	Adapter	⇒ Fig 43. (□ 1-27)
892/00268	Flow Monitoring Unit	⇒ Fig 49. (□ 1-29)
892/00269	Sensor Head	⇒ Fig 49. (□ 1-29)
892/00270	Load Valve	⇒ Fig 49. (□ 1-29)
892/00271	Adapter	⇒ Fig 49. (□ 1-29)
892/00272	Adapter	⇒ Fig 49. (□ 1-29)
892/00273	Sensor Head	⇒ Fig 49. (□ 1-29)
892/00274	Adapter	⇒ Fig 49. (□ 1-29)
892/00275	Adapter	⇒ Fig 49. (□ 1-29)
892/00276	Adapter	⇒ Fig 49. (□ 1-29)
892/00277	Adapter	⇒ Fig 49. (□ 1-29)
892/00278	Gauge	⇒ Fig 54. (□ 1-31)
892/00279	Gauge	⇒ Fig 53. (□ 1-30)
892/00284	Tachometer	⇒ Fig 35. (□ 1-24)
892/00285	Hydraulic Oil Temperature Probe	⇒ Fig 34. (□ 1-24)
892/00293	Connector Pipe	⇒ Fig 49. (□ 1-29)
892/00298	Fluke Meter	⇒ Fig 33. (□ 1-24)
892/00311	Brake Test Kit	⇒ Fig 56. (□ 1-32)
892/00314	Accumulator Adapter	⇒ Fig 57. (□ 1-32)
892/00314	Accumulator and Gas Spring Pressure Test Adapter	⇒ Fig 57. (□ 1-32)
892/00318	Hose and Adapter Kit	⇒ Fig 55. (□ 1-31)
892/00347	Connector	⇒ Fig 51. (□ 1-30)



Section 1 - General Information Special Tools

Numerical List

Part Number	Description	Tool Detail Reference
892/00706	Test Probe	⇒ Fig 54. (□ 1-31)
892/00801	Clutch spanner	⇒ Fig 28. (□ 1-22)
892/00802	Rotor puller set	⇒ Fig 30. (□ 1-22)
892/00803	Rotor installer set	⇒ Fig 32. (□ 1-23)
892/00807	Front plate puller	⇒ Fig 29. (□ 1-22)
892/00808	Shaft protector	⇒ Fig 31. (□ 1-22)
892/00842	Glass Lifter	⇒ Fig 19. (□ 1-20)
892/00843	Folding Stand	⇒ Fig 17. (□ 1-19)
892/00844	Long Knife	⇒ Fig 25. (□ 1-21)
892/00845	Cartridge Gun	⇒ Fig 15. (□ 1-19)
892/00846	Glass Extractor	⇒ Fig 22. (□ 1-21)
892/00847	Nylon Spatula	⇒ Fig 26. (□ 1-22)
892/00848	Wire Starter	⇒ Fig 20. (□ 1-20)
892/00849	Braided Cutting Wire	⇒ Fig 24. (□ 1-21)
892/01033	Data Link Adapter Kit - ABS	⇒ Fig 36. (□ 1-24)
992/12300	Mobile Oven	⇒ Fig 16. (□ 1-19)
992/12400	Static Oven	⇒ Fig 18. (□ 1-20)
992/12600	Static Oven	⇒ Fig 18. (□ 1-20)
992/12800	Cut-out Knife	⇒ Fig 21. (□ 1-20)
992/12801	'L' Blades	⇒ Fig 23. (□ 1-21)
992/15500	Rubber Spacer Blocks	⇒ Fig 27. (□ 1-22)
993/68101	Slide Hammer	⇒ Fig 11. (□ 1-17)
993/68102	End Stops	⇒ Fig 11. (□ 1-17)
993/68103	Adapter	⇒ Fig 11. (□ 1-17)
993/68104	Adapter	⇒ Fig 11. (□ 1-17)
993/68105	Adapter	⇒ Fig 11. (□ 1-17)
993/68106	Adapter	⇒ Fig 11. (□ 1-17)
993/68107	Bar	⇒ Fig 11. (□ 1-17)
993/68108	Adapter	⇒ Fig 11. (□ 1-17)
993/68109	Adapter	⇒ Fig 11. (□ 1-17)
993/68110	Adapter	⇒ Fig 11. (□ 1-17)
993/68111	Adapter	⇒ Fig 11. (□ 1-17)
993/69800	Seal Kit	⇒ Fig 51. (□ 1-30)

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