JCB

DRIVETRAIN SYSTEMS

Service Manual

PD70 SERIES
MODULAR DRIVEHEAD

Publication No. 9803/9285
Issue 3

PD70 Series Axle With Modular Drivehead

Service Manual

Publication No. 9803/9825

Record of Changes

Date	Page	Issue	Changes
April 2004	Cover	2	Issue number raised.
	4i	2	Ref to Page 2-2 added
	4-2-1	2	Illustration amended
	4-2-2	1	New page
	4-7-10	2	Text re. hand pump amended (2.2.1 and Note)
	5-2-3	2	Cross reference added

Introduction

This publication is designed for the benefit of Service Engineers.

These personnel should have a sound knowledge of workshop practice, safety procedures, and general techniques associated with the maintenance and repair of hydraulic 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 etc.

The remaining sections deal with Dismantling, Overhaul etc. of specific components:

4 = Drivehead
5 = Brakes

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

Section contents, technical data, operation descriptions etc. are inserted at the beginning of each 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:

"**16** Remove the output shaft assemblies (see **Output Shafts - Removal and Dismantling**, Section 4)."

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.

Contents

General Description

The PD70 modular drivehead has external service brake discs and callipers mounted on each output driveshaft. Single callipers are fitted as standard, with twin callipers fitted as an option. An optional parking brake disc and calliper may be installed on the input shaft as shown.

The drivehead houses the differential assembly. The differential gearing has specially shaped spider gears that provide 'torque proportioning'. This means that drive transmitted to the road wheels will be kept on one wheel if the other is slipping. The differential can incorporate a 'soft engage' differential lock as an option.

Unit Identification

Drivehead Serial Plate

The drivehead serial number is stamped on a plate, which is fitted on the housing near to the input driveshaft as shown.

1 When replacement parts are required, always ensure that the correct parts are obtained, e.g. in the case of gear replacements, always check the part number stamped on the gear, and the number of teeth.

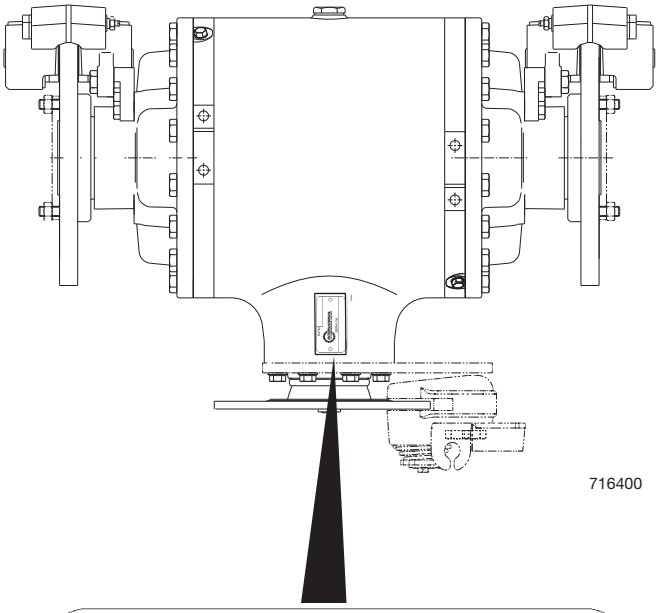
2 When ordering replacement parts, quote the details on the serial plate.

3 It is essential that all gaskets and seals removed while dismantling are renewed on reassembly.

4 On reassembly care should be taken that all parts are correctly replaced since any component omitted or incorrectly assembled can lead to a complete failure.

5 Lubricants should comply with the recommended list as provided in this manual. It is important to adhere to the oil changing procedure.

6 It is advisable to lightly lubricate with a recommended lubricant, parts such as gears, shafts, thrust washers and oil seals during reassembly.



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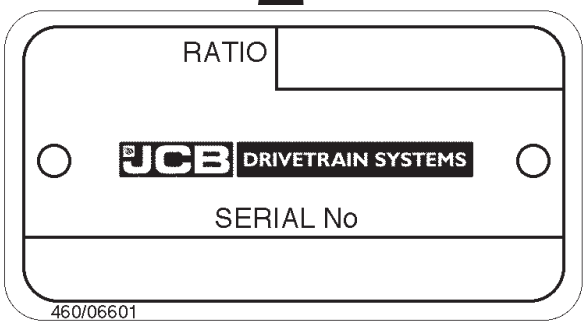

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Torque Settings

Use 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.

UNF Grade 'S' Bolts

Bolt Size in	(mm)	Hexagon (A/F) in	Torque Settings Nm	kgf m	lbf ft
1/4	(6.3)	7/16	14	1.4	10
5/16	(7.9)	1/2	28	2.8	20
3/8	(9.5)	9/16	49	5.0	36
7/16	(11.1)	5/8	78	8.0	58
1/2	(12.7)	3/4	117	12.0	87
9/16	(14.3)	13/16	170	17.3	125
5/8	(15.9)	15/16	238	24.3	175
3/4	(19.0)	1 1/8	407	41.5	300
7/8	(22.2)	15/16	650	66.3	480
1	(25.4)	1 1/2	970	99.0	715
1 1/4	(31.7)	1 7/8	1940	198.0	1430
1 1/2	(38.1)	2 1/4	3390	345.0	2500

Metric Grade 8.8 Bolts

Bolt Size	(mm)	Hexagon (A/F) mm	Torque Settings Nm	kgf m	lbf ft
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
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 12.9 Bolts

Bolt Size	(mm)	Torque Settings Nm	kgf m	lbf ft
M8	(8)	48	4.9	35
M10	(10)	94	9.6	69
M12	(12)	166	16.9	122
M14	(14)	320	32.6	236
M16	(16)	400	40.8	295

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

Service Tools Numerical List

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4102/0552	Loctite 275	5 - 1
4102/1212	Loctite 574 or Permabond A136	5 - 1
4102/1951	Loctite 577	5 - 1
4103/0955	Superbonder	5 - 1
4104/0251	Activator (Aerosol)	5 - 1
4104/0253	Activator (Bottle)	5 - 1
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829/30405	Spacer 12.625 mm thick	4 - 3
829/30406	Spacer 12.675 mm thick	4 - 3
829/30407	Spacer 12.725 mm thick	4 - 3
829/30408	Spacer 12.775 mm thick	4 - 3
829/30409	Spacer 12.825 mm thick	4 - 3
829/30410	Spacer 12.875 mm thick	4 - 3
829/30411	Spacer 12.925 mm thick	4 - 3
829/30412	Spacer 12.975 mm thick	4 - 3
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829/30414	Spacer 13.075 mm thick	4 - 3
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921/52605	Spacer 12.950 mm thick	4 - 3
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921/52626	Spacer 14.000 mm thick	4 - 3
921/52627	Spacer 14.200 mm (Service Use)	4 - 3
921/52628	Spacer 12.600 mm thick	4 - 3
921/52629	Spacer 12.650 mm thick	4 - 3
921/52630	Spacer 12.700 mm thick	4 - 3
921/53400	Spacer Kit	4 - 3
921/53401	Spacer 13.400 mm thick	4 - 3
921/53402	Spacer 13.425 mm thick	4 - 3
921/53403	Spacer 13.450 mm thick	4 - 3
921/53404	Spacer 13.475 mm thick	4 - 3
921/53405	Spacer 13.500 mm thick	4 - 3
921/53406	Spacer 13.525 mm thick	4 - 3
921/53407	Spacer 13.550 mm thick	4 - 3
921/53408	Spacer 13.575 mm thick	4 - 3
921/53409	Spacer 13.600 mm thick	4 - 3

		Page No.
921/53410	Spacer 13.625 mm thick	4 - 3
921/53411	Spacer 13.650 mm thick	4 - 3
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921/53413	Spacer 13.700 mm thick	4 - 3
921/53414	Spacer 13.725 mm thick	4 - 3
921/53415	Spacer 13.750 mm thick	4 - 3
921/53416	Spacer 13.775 mm thick	4 - 3
921/53417	Spacer 13.800 mm thick	4 - 3
921/53418	Spacer 13.825 mm thick	4 - 3
921/53419	Spacer 13.850 mm thick	4 - 3
921/53420	Spacer 13.875 mm thick	4 - 3
921/53421	Spacer 13.900 mm thick	4 - 3
921/53422	Spacer 13.925 mm thick	4 - 3
921/53423	Spacer 13.950 mm thick	4 - 3
921/53424	Spacer 13.275 mm thick	4 - 3
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992/04000	Torque Multiplier	4 - 1
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993/70111	Breakback Torque Wrench	4 - 3
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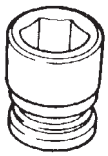
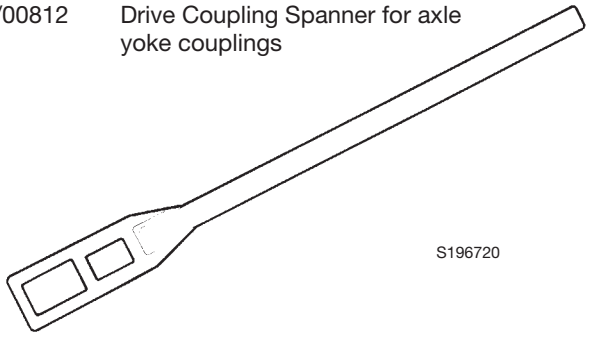


S216290

892/00817 17 mm A/F x 3/4 in square drive
892/00818 22 mm A/F x 3/4 in square drive
892/00819 15 mm A/F x 1/2 in square drive
892/00333 19 mm A/F x 3/4 in square drive

892/00812 Drive Coupling Spanner for axle yoke couplings



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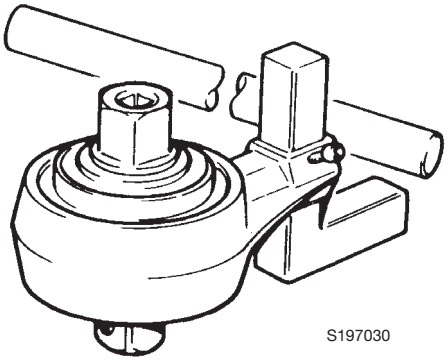


S197030

992/04000

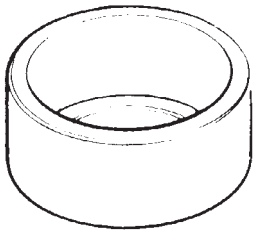
Torque Multiplier (use in conjunction with a torque wrench to give a 5:1 multiplication when tightening pinion nuts)

892/00822

Spring Socket for Driveshaft Bolts

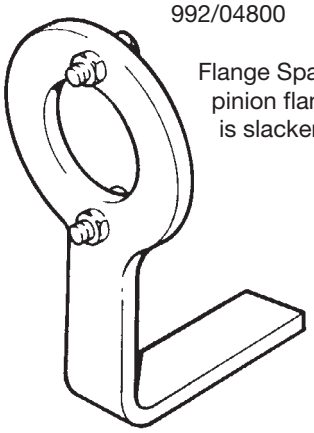
892/00174

Measuring Cup - Pinion Head Bearing



S190770

992/04800



Flange Spanner - for locking pinion flange while pinion nut is slackened or torque set

S197040

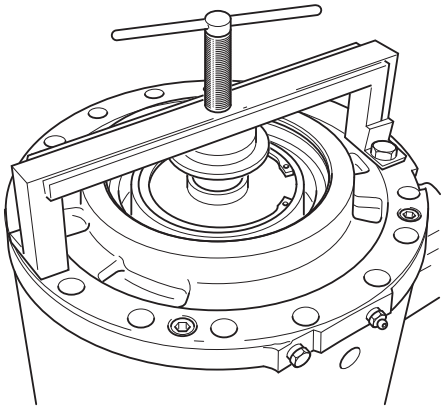
921/01900 Shim Kit - Pinion Head Bearing
Comprises:

	Shim thickness mm
921/01901	0.15
921/01902	0.20
921/01903	0.25
921/01904	0.50
921/01905	1.00

747030

Note: After using a shim, obtain a replacement to keep the set complete.

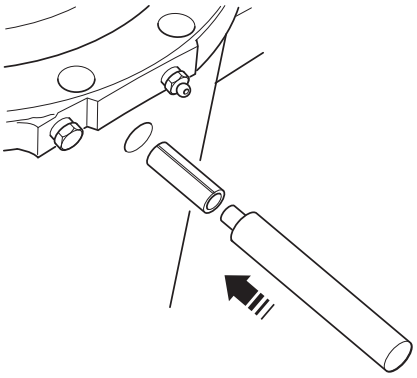
Service Tools (cont'd)



716550

892/01166

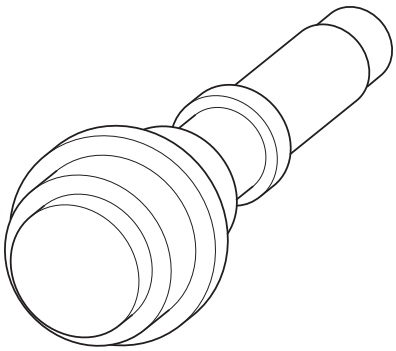
Spring Compression Tool - for compressing differential lock spring (Soft Engage Differential Lock Only) 716550



716560

892/01167

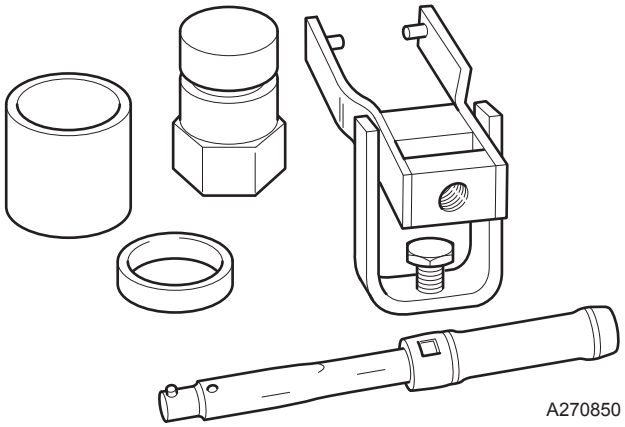
Extension Rod - for inserting side nut locking pin (Soft Engage Differential Lock only) 716560



892/01085

Oil Seal Insertion Tool

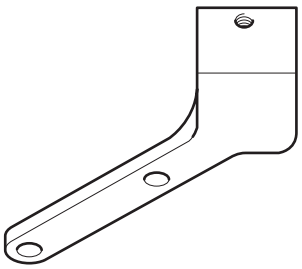
Service Tools (cont'd)



A270850

Solid Spacer Setting Kit

892/00918	Setting Tool Kit
921/52627	Spacer 14.20 mm (Service Use)
993/70111	Breakback Torque Wrench
998/10567	M24 Adapter



A396960

892/01075 Support Bracket

921/53400 Spacer Kit

Comprises of:

	Spacer thickness
921/52628	12.600 mm
829/30405	12.625 mm
921/52629	12.650 mm
829/30406	12.675 mm
921/52630	12.700 mm
829/30407	12.725 mm
921/52601	12.750 mm
829/30408	12.775 mm
921/52602	12.800 mm
829/30409	12.825 mm
921/52603	12.850 mm
829/30410	12.875 mm
921/52604	12.900 mm
829/30411	12.925 mm
921/52605	12.950 mm
829/30412	12.975 mm
921/52606	13.000 mm
829/30413	13.025 mm
921/52607	13.050 mm
829/30414	13.075 mm
921/52608	13.100 mm
829/30415	13.125 mm
921/52609	13.150 mm
829/30416	13.175 mm
921/52610	13.200 mm
829/30417	13.225 mm
921/52611	13.250 mm
921/53424	13.275 mm
921/53425	13.300 mm
921/53426	13.325 mm
921/53427	13.350 mm
921/53428	13.375 mm
921/53401	13.400 mm
921/53402	13.425 mm
921/53403	13.450 mm
921/53404	13.475 mm
921/53405	13.500 mm
921/53406	13.525 mm
921/53407	13.550 mm
921/53408	13.575 mm
921/53409	13.600 mm
921/53410	13.625 mm
921/53411	13.650 mm
921/53412	13.675 mm
921/53413	13.700 mm
921/53414	13.725 mm
921/53415	13.750 mm
921/53416	13.775 mm
921/53417	13.800 mm
921/53418	13.825 mm
921/53419	13.850 mm
921/53420	13.875 mm
921/53421	13.900 mm
921/53422	13.925 mm
921/53423	13.950 mm
921/52626	14.000 mm

Note: After using a spacer, obtain a replacement to keep the set complete.

Sealing and Retaining Compounds

Loctite 574 or **Permabond A136**	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	
Loctite 275 or **Permabond A140**	For all sizes of flange where the strength of the joint is important.	† 4102/0552	
Loctite 932 or **Permabond A137**	For all retaining parts which are likely to be dismantled and for use on threads larger than 50 mm dia.	4101/0451	
Loctite 242 or **Permabond A113**	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.	† 4101/0251	
Loctite 243	A medium strength locking fluid similar to Loctite 242 but with greater resistance to thread contamination.	4101/0250	
Loctite 648 or **Permabond A118**	For retaining parts which are unlikely to be dismantled.	4101/0651	
Loctite 577	A medium strength thread sealing compound.	4102/1951	
Superbonder	Bonding/Sealant	† 4103/0955	
Loctite Activator	A cleaning primer which speeds the curing rate of anaerobic products.	† 4104/0251 † 4104/0253	Aerosol Bottle
Cleaner/Degreaser	For degreasing components prior to use of anaerobic adhesives and sealants.	† 4104/1557	Aerosol
Anti-Seize Paste	A compound used for assembly and prevention of thread seizure.	† 4003/0211	

Note: The above list is the range of sealants and retaining compounds available. Items marked † are those referred to within the sections.

Contents	Page No.

Safety Notices

In this publication there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.
INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.
INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.
INT-1-2-3

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