



**DRIVETRAIN  
SYSTEMS**

# Service Manual

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## **NOTE**

All references in this manual to 'Forward' and 'Reverse' assume a front-mounted engine.

## **PD 55 AXLE**

Publication No. 9803/9260  
Issue 4

# PD55 Axles Service Manual

Publication No. 9803/9260

## Record of Changes

2nd Update

Date	Page	Issue	Changes
Dec 1998	Cover	3	Issue number raised.
	1/Cont i	2	Axle Build Identification was Limited Slip Differential.
	2/4-2	2	Warnings GEN-1-12 and GEN-1-13 added.
	5/7-1	2	Blanking plugs Y and Z added to illustration.
	5/7-2	2	Note regarding excessive wear added to item 7.
	5/7-3	2	Blanking plugs Y and Z added to illustration.
	5/7-4	2	Residual Brake System Pressure note added to item 14. (Taken from 9803/3260 520-50 S/M). Notes added to items 5 and 7. Item 7 changed.
	5/7-5	2	Information moved from 5/7-4.
	5/8-1	2	Blanking plugs Y and Z added to illustration.
	5/8-2	2	Note regarding excessive wear added to item 7.
	5/8-3	2	Blanking plugs Y and Z added to illustration.
	5/8-4	2	Residual Brake System Pressure note added. Notes added to items 5 and 7. Item 12 changed. Item 7 changed.
	5/8-5	2	Information moved from page 8-4.
	6/Cont i	2	Residual Brake System Pressure added. Brake Seal or Component Leakage added.
	6/2-1	2	Residual Brake System Pressure information added.
	6/2-2	1	New page.
	6/2-3	1	New page.

# PD55 Axles Service Manual

Publication No. 9803/9260

## Record of Changes

1st Update

Date	Page	Issue	Changes
Sept 1998	Cover	2	Issue number raised.
	1/1-1	2	Axle Build Identification heading was Limited Slip Differential.

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## 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:

- 5 = **Axles**
- 6 = **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:

"**24** If the axle is still on the machine, fit the brake calipers (see **Brake Caliper Removal and Replacement**, Section 6)."

**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.

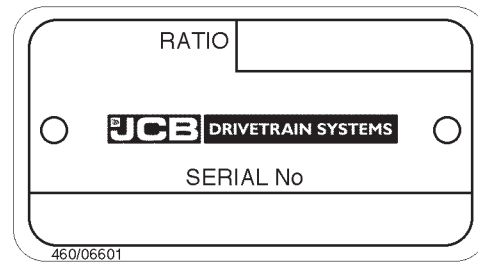
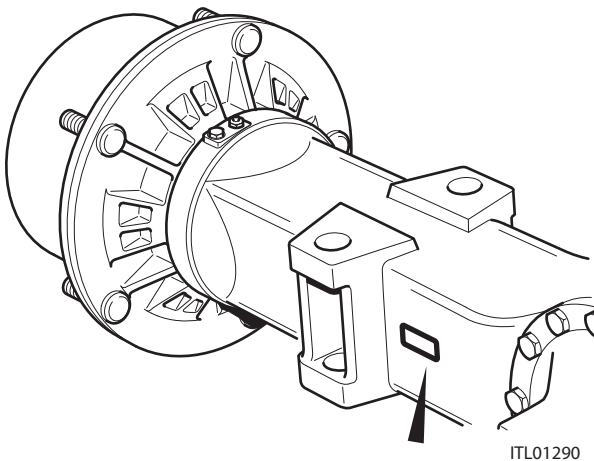
'Left Hand' and 'Right Hand' are as viewed from the rear of the machine facing forwards.

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## Unit Identification

### Axle Serial Plate

The axle serial number is stamped on a plate mounted on the face of the axle, as shown.



234620

## Replacement Parts

- 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 shown.
- 3 It is essential that all gaskets and seals removed while dismantling, should be 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.

## \* Axle Build Identification

To identify an axle build, the number on the axle data plate should be cross-referenced with the part number in the parts information.

Example:

450 / 2760 / 1 / 0091  

A
B
C

- A** 450/2760: Axle assembly part number (450/27600) without the final zeros.
- B** /1: Internal issue number of the main manufacturing drawing.
- C** /0091: Axle serial number. The complete 12 digit number must be quoted for warranty purposes. The parts information will detail the number of friction plates required for the axle.

## 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)	11/8	407	41.5	300
7/8	(22.2)	15/16	650	66.3	480
1	(25.4)	11/2	970	99.0	715
11/4	(31.7)	17/8	1940	198.0	1430
11/2	(38.1)	21/4	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

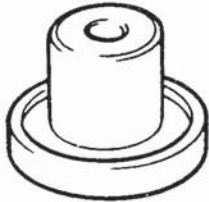
**Note:** All bolts are high tensile and must not be replaced by bolts of a lesser tensile specification.

**Service Tools Numerical List****Page No.**

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Service Tools



992/07604

Replacer - Crownwheel Bearing and Differential Bearing Cones



992/07606

Measuring Cup - Pinion Bearing



992/07609

Adapter - Drive Axle Pinion Bearing Cone



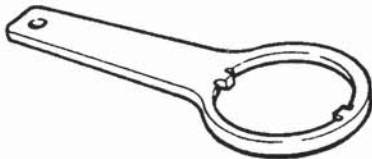
892/00817  
892/00818  
892/00819  
892/00333

17 mm A/F x 3/4 in square drive  
22 mm A/F x 3/4 in square drive  
15 mm A/F x 1/2 in square drive  
19 mm A/F x 3/4 in square drive



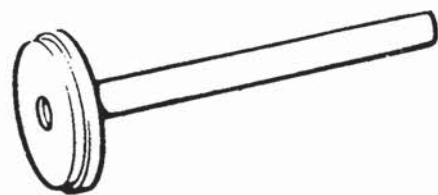
992/07607

Spacer - Pinion Bearing Preload



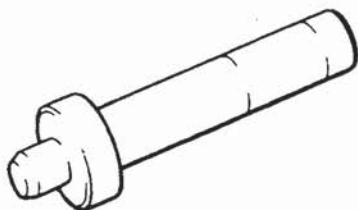
992/07601

Spanner for Half Shaft Nuts



992/07603

Replacer - Pinion Head Bearing Cup

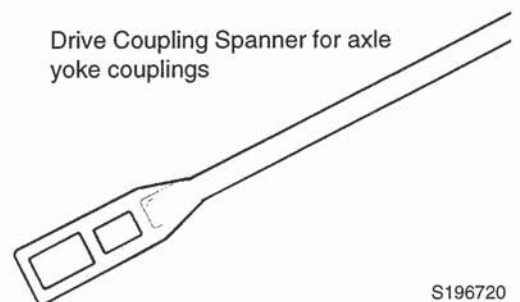


892/00182

Bearing Pad Driver

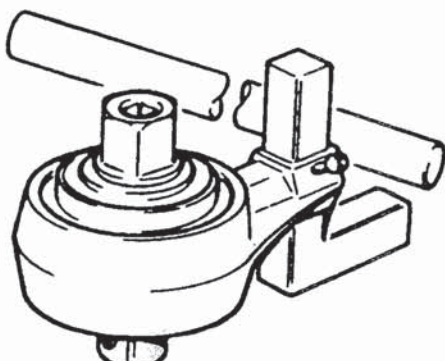
892/00812

Drive Coupling Spanner for axle yoke couplings



S196720

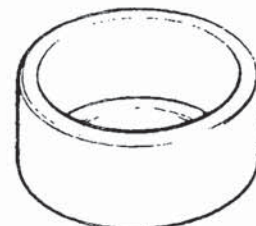
Service Tools (cont'd)



992/04000

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

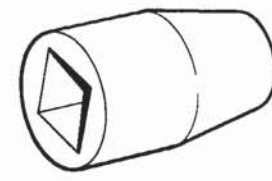
S197030



892/00174

Measuring Cup - Pinion Head Bearing

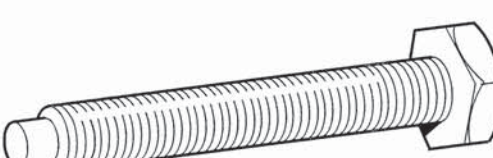
S190770



892/00822


Splined Bolt Socket for driveshafts

S197060



892/00833

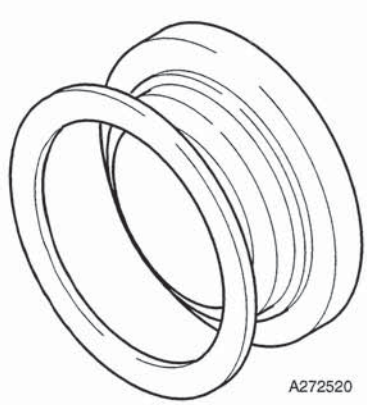
Annulus Removal Tool



892/00224

Impulse Extractor Set for Hub Bearing Seals

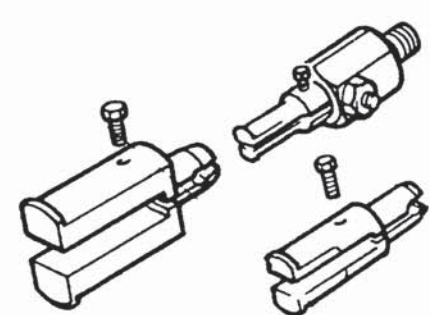
S197070



A272520

892/00891

Oil Seal Insertion Tool



892/00225

Adapter - Impulse Extractor	
Small	17 mm to 25 mm
Medium	25 mm to 45 mm
Large	45 mm to 80 mm

## Sealing and Retaining Compounds

<b>Loctite 574 or Permabond A136</b>	A medium strength sealant suitable for all sizes of gasket flanges, and for hydraulic fittings of 25-65 mm diameter.	4102/1212	
<b>Loctite 275 or Permabond A140</b>	For all size of flanges where the strength of the joint is important.	4102/0551	
<b>Loctite 932 or Permabond A137</b>	For all retaining parts which are likely to be dismantled and for use on threads larger than 50 mm dia.	† 4101/0451	
<b>Loctite 242 or Permabond A113</b>	A medium strength locking fluid for sealing and retaining nuts, bolts, and screws up to 50mm diameter, and for hydraulic fittings up to 25 mm diameter.	† 4101/0251	
<b>Loctite 243</b>	A medium strength locking fluid similar to Loctite 242 but with greater resistance to thread contamination.	4101/0250	
<b>Loctite 648 or Permabond A118</b>	For retaining parts which are unlikely to be dismantled.	4101/0651	
<b>Loctite 577</b>	A medium strength thread sealing compound.	4102/1951	
<b>Loctite Activator</b>	A cleaning primer which speeds the curing rate of anaerobic products.	† 4104/0251 † 4104/0253	Aerosol Bottle
<b>Cleaner/Degreaser</b>	For degreasing components prior to use of anaerobic adhesives and sealants.	† 4104/1557	Aerosol

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

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## Safety Notices

In this publication and on the machine, 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

All machinery, whether mobile or static, can be hazardous. When equipment is correctly operated and properly maintained it can be safe to work with. But when it is carelessly operated or poorly maintained it can become a danger.

Do not work with any equipment until you are sure that it is serviceable, that you know how to control it and be aware of all relevant safety requirements.

If the equipment covered by this manual forms part of a larger product (eg. a vehicle) be sure to observe the safety requirements which relate to the product as a whole, as well as those given in this manual.

On this and the following pages and throughout this manual, you will find safety messages. Please read and understand these safety messages before using and working on the equipment covered in this manual.

**Make sure you also read and understand all other safety messages contained in operator handbooks and service manuals concerned with the product of which this equipment forms part.**

**Remember**

**BE CAREFUL  
BE ALERT  
BE SAFE**

## General Safety

### **WARNING**

#### **Decals**

**This equipment may include safety decals**

You can be injured if you do not obey decal safety instructions. Keep decals clean. Replace unreadable or missing decals with new ones before operating the equipment. Make sure replacement parts include warning decals where necessary.

### **WARNING**

#### **Clothing**

You can be injured if you do not wear the proper clothing. Loose clothing can get caught in the equipment. Wear protective clothing to suit the job. Examples of protective clothing are: a hard hat, safety shoes, safety glasses, a well fitting overall, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained.

### **WARNING**

#### **Alcohol and Drugs**

It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or whilst operating the machine or attachments. Be aware of medicines which can cause drowsiness.

INT-1-3-9

### **WARNING**

#### **Lifting Equipment**

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

INT-1-3-7

### **WARNING**

#### **Raised Attachments**

Raised attachments on certain kinds of equipment can fall and injure you. Do not walk or work under raised attachments unless they are safely blocked.

INT-1-3-8

### **WARNING**

#### **Care and Alertness**

All the time you are working with or on the equipment, take care and stay alert. Always be careful. Always be alert for hazards.

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