

Transmissions

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General Information

Service Manual - Transmissions

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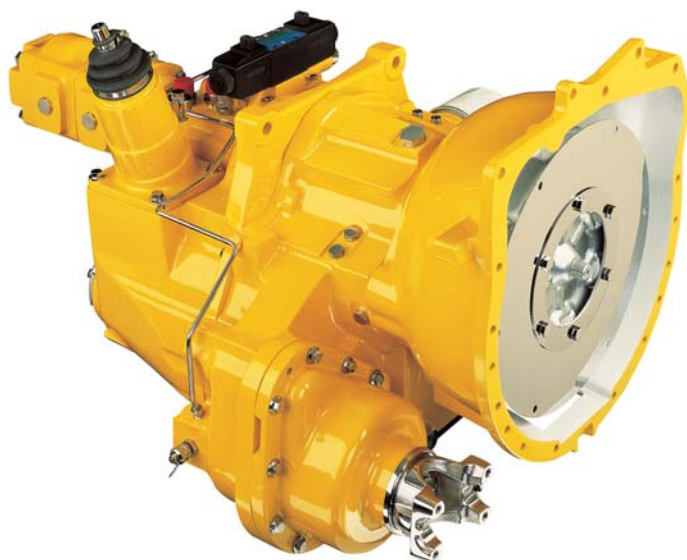
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Section 1 - General Information

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About This Manual

Scope

The publication is built up in a modular way to include procedures for dismantling, inspection and assembly of JCB axles and gearboxes. It should be noted that procedures given in this manual are for transmission assemblies only. Service procedures specific to machine transmission installations are given in the relevant machine service manual.

When applicable, procedures in this manual are referred to in the JCB machine service manual. To check the cross reference see the transmission Technical Data pages in the machine service manual. There are many transmission variants, ensure that you are referencing the correct procedures for the applicable transmission assembly.

Axles

Because axles are modular many axle sizes and types are manufactured using a small number of sub-assemblies.

For this reason the procedures in this manual are for axle sub-assemblies not complete axle assemblies. This means that procedures appear only once.

Axle Sub-assembly Identification

| Sub-assembly | Section | Typical Axle Assemblies |
|--|----------|-------------------------|
| Axle Hubs (Includes hubs with integral brakes) | A | |
| Axle Hub Swivels and Driveshafts | B | |
| Axle Integral Brakes | C | |
| Axle Drive Heads (Includes drive heads for 1 piece axles (A) and 3 piece axles (B)) | D | |

Applicable Machines

The tables show which transmission dismantle and assembly procedure is applicable to which machine. Use the cross references to the procedures in this manual.

Important: One machine model can have more than one transmission option. Always cross check the **Transmission Technical Data** in the applicable **Machine Service Manual** for the correct transmission component information.

- [⇒ Gearbox Procedures \(□ 1-3\)](#)
- [⇒ Front Axle Procedures \(□ 1-4\)](#)
- [⇒ Rear Axle Procedures \(□ 1-6\)](#)
- [⇒ Brakes Procedures \(□ 1-8\)](#)
- [⇒ Transfer Gearbox Procedures \(□ 1-9\)](#)

Table 1. Gearbox Procedures

| Machines | Service Manual | Procedures | |
|--|-------------------------------------|-------------------------------------|---|
| | | Manual Gearboxes ⁽¹⁾ | Powershift Gearboxes ⁽¹⁾ |
| Backhoe Loaders | | Section E | Section F |
| 2CX, 212 - 930000 on | 9803/7130 | SS500 Synchro Shuttle | - |
| 3CX - 960001 on | 9803/3290 | SS700 Synchro Shuttle | - |
| 3CX - 960001 to Jan 2012 | 9803/3290 9813/0250 | SS700 Type 2 Synchro Shuttle | - |
| 3CX - Jan 2012 on | 9813/0250 | SS750 Synchro Shuttle | - |
| 3CX, 4CX, 5CX 960001 on | 9803/3290 9813/0250 | - | PS766 and PS764 - 2004 model Powershift |
| Loadalls | | | |
| Side Engined 768740 to 1185999 | 9803/3630 | - | PS700 Powershift |
| Side Engined 768740 to 1185999 | 9803/3630 | - | PS750 Powershift⁽²⁾ |
| Side Engined up to 10.5m lift height - 1186000 to 1507999 | 9803/3730 | - | PS750 Powershift, PS750 Powershift MkIII, PS766 and PS764 - 2004 model Powershift |
| Side Engined over 10.5m lift height - 1186000 to 1507999 | 9803/3730 | - | PS750 Powershift, PS750 Powershift MkIII |
| Side Engined - 506-36, 507-42, 509-42, 510-55 - 1402000 on | 9803/3740 9813/1800 | - | PS750 Powershift MkIII, PS750 Powershift MKIV |
| Side Engined Construction Machines 1508000 on | 9803/3750 9813/0950 9813/1450 | | PS750 Powershift MkIII, PS750 Powershift MKIV, PS766 and PS764 - 2004 model Powershift |
| Side Engined Agricultural Machines 1508000 on | 9803/3760 9813/0900 9813/1500 | SS700 Type 2 Synchro Shuttle | PS750 Powershift MkIII, PS750 Powershift MKIV, PS766 and PS764 - 2004 model Powershift |
| Rear Engined 1182000 on | 9803/3710 | SS600 Synchro Shuttle | PS750 Powershift, PS750 Powershift MkIII |
| Rough Terrain Fork Lifts | | | |
| 921, 926, 930, 940 - 600001 on | 9803/5100 | SS600 Synchro Shuttle | - |

(1) Includes procedures for 2WD and 4WD gearboxes if applicable

(2) Includes the 5 speed variant



Section 1 - General Information About This Manual

Applicable Machines

Table 2. Front Axle Procedures

| Machines | Service Manual | Procedures | | |
|---|-------------------------------------|--|--|--|
| | | Drive Head | Hub Swivel and Driveshaft | Hub |
| | | Section D | Section B | Section A |
| Backhoe Loaders | | | | |
| Midi | 9803/9400 | 40 Series Drive Head (3 Piece Axles) | - | 40 Series Hub |
| 2CX, 212 - 930000 on | 9803/7130 | 55 and 80 Series Drive Head (1 Piece Axles) | - | 55 and 70 Series Hub |
| 3CX (2WS, 2WD) - 960001 on | 9803/3290 | - | Refer to Hub | Dead Steer Hub |
| 3CX, 4CX (2WS, 4WD) - 960001 on | 9803/3290 9813/0250 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |
| 3CX, 4CX, 5CX (4WS, 4WD) - 960001 on | 9803/3290 9813/0250 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Loadalls | | | | |
| Side Engined - 768740 to 1185999 | 9803/3630 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined - 1186000 to 1507999 | 9803/3730 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined - 506-36 - 1402000 on | 9803/3740 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 Series Hub |
| Side Engined - 507-42, 509-42, 510-55 - 1402000 on | 9803/3740 9813/1800 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined 'low boom'- 1186000 to 1507999 | 9803/3730 9813/0950 9813/1450 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined Construction Machines - 1508000 on | 9803/3750 9813/9050 9813/1450 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined Agricultural Machines - 1508000 on | 9803/3760 9813/0900 9813/1500 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub, 80 Series Hub |
| Side Engined Hydrostatic Machines - 527-58 - 1473000 on | 9813/0200 | 55 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |



Section 1 - General Information About This Manual

Applicable Machines

| Machines | Service Manual | Procedures | | |
|--------------------------------------|-------------------|--|--|-----------------------------|
| | | Drive Head | Hub Swivel and Driveshaft | Hub |
| | | <i>Section D</i> | <i>Section B</i> | <i>Section A</i> |
| Rear Engined 1182000 on | 9803/3710 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Compact - 515-40,520-40 from 1012000 | 9803/3690 | 40 Series Drive Head (1 Piece Axles) | 40 Series Hub Swivel and Driveshaft | 40 Series Hub |
| Compact 524-50,527-55 from 1068000 | 9803/3690 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 40 Series Hub |
| Rough Terrain Fork Lifts | | | | |
| 921, 926, 930, 940 - 600001 on | 9803/5100 | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 55 and 70 Series Hub |
| Wheeled Loading Shovels | | | | |
| 414S, 416S, 416HT | September 2011 on | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 87 Series Hub |

Table 3. Rear Axle Procedures

| Machines | Service Manual | Procedures | | |
|--|------------------------|--|--|--|
| | | Drive Head | Hub Swivel and Driveshaft | Hub |
| | | <i>Section D</i> | <i>Section B</i> | <i>Section A</i> |
| Backhoe Loaders | | | | |
| Midi | 9803/9400 | 40 Series Drive Head and Drop Box (3 Piece Axles) | 70 Series Driveshaft | 40 Series Hub |
| 2CX, 212 - 930000 on | 9803/7130 | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 55 and 70 Series Hub |
| 3CX (2WS, 2WD) - 960001 on | 9803/3290 9813/0250 | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 55 and 70 Series Hub |
| 3CX, 4CX (2WS, 4WD) - 960001 on | 9803/3290 9813/0250 | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 55 and 70 Series Hub |
| 3CX, 4CX (4WS, 4WD) - 960001 on | 9803/3290 9813/0250 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Loadalls | | | | |
| Side Engined up to 10.5 metre lift height - 768740 to 1185999 | 9803/3630 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |
| Side Engined over 10.5 metre lift height - 768740 to 1185999 | 9803/3630 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub with Integral Brake |
| Side Engined up to 10.5 metre lift height - 1186000 to 1507999 | 9803/3730 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |
| Side Engined 'low boom'- 1186000 to 1507999 | 9803/3730 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Side Engined - 506-36 - 1402000 on | 9803/3740 9813/1800 | 55 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 Series Hub |
| Side Engined - 507-42, 509-42, 510-55 - 1402000 on | 9803/3740 9813/1800 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 Series Hub |
| Side Engined over 10.5 metre lift height - 1186000 to 1507999 | 9803/3730 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub with Integral Brake |



Section 1 - General Information About This Manual

Applicable Machines

| Machines | Service Manual | Procedures | | |
|---|-------------------------------------|--|--|---|
| | | Drive Head | Hub Swivel and Driveshaft | Hub |
| | | <i>Section D</i> | <i>Section B</i> | <i>Section A</i> |
| Side Engined Construction Machines - 1508000 on | 9803/3750 9813/0950 9813/1450 | 55 and 80 Series Drive Head (1 Piece Axles), 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub, 80 Series Hub with Integral Brake |
| Side Engined Agricultural Machines - 1508000 on | 9803/3760 9813/0900 9813/1500 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hubs |
| Side Engined Hydrostatic Machines - 527-58 - 1473000 on | 9813/0200 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |
| Rear Engined 1182000 on | 9803/3710 | 80 Series Drive Head (3 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 80 Series Hub |
| Compact 515-40,520-40 from 1012000 | 9803/3690 | 40 Series Drive Head (1 Piece Axles) | 40 Series Hub Swivel and Driveshaft | 40 Series Hub |
| Compact 524-50,527-55 from 1068000 | 9803/3690 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 40 Series Hub |
| Rough Terrain Fork Lifts | | | | |
| 921, 926, 930, 940 2WD - 600001 on | 9803/5100 | - | - | Dead Steer Hub |
| 921, 926, 930, 940 4WD - 600001 on | 9803/5100 | 55 and 80 Series Drive Head (1 Piece Axles) | 55 Series Hub Swivel and Driveshaft | 55 and 70 Series Hub |
| Wheeled Loading Shovels | | | | |
| 416, 416S, 414S | | 80 Series Drive Head (3 Piece Axles) | 70 Series Driveshaft | 87 Series Hub |



Section 1 - General Information About This Manual

Applicable Machines

Table 4. Brakes Procedures

| Machines | Service Manual | Procedures | |
|--|-------------------------------------|--|--|
| | | Axle Integral Brakes | Hub Brakes |
| | | Section C | Section A |
| Backhoe Loaders | | | |
| Midi | 9803/9400 | 40 Series Integral Brakes (3 Piece Axles) | - |
| 2CX, 212 - 930000 on | 9803/7130 | 70 Series Integral Brakes (3 Piece Axles) | - |
| 3CX ,4CX - 960001 on | 9803/3290 9813/0250 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Loadalls | | | |
| Side Engined up to 10.5 metre lift height - 768740 to 1185999 | 9803/3630 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Side Engined over 10.5 metre lift height - 768740 to 1185999 | 9803/3630 | 70 Series Integral Brakes (3 Piece Axles) | 80 Series Hub with Integral Brake |
| Side Engined up to 10.5 metre lift height - 1186000 to 1507999 | 9803/3730 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Side Engined `low boom'- 1186000 to 1507999 | 9803/3730 | 70 Series Integral Brakes (3 Piece Axles) | 70 Series Integral Brakes (3 Piece Axles) |
| Side Engined - 506-36 - 1402000 on | 9803/3740 9813/1800 | 70 Series Integral Brakes (3 Piece Axles) | |
| Side Engined - 507-42, 509-42, 510-55 - 1402000 on | 9803/3740 9813/1800 | 70 Series Integral Brakes (3 Piece Axles) | |
| Side Engined over 10.5 metre lift height - 1186000 to 1507999 | 9803/3730 | 70 Series Integral Brakes (3 Piece Axles) | 80 Series Hub with Integral Brake |
| Side Engined Construction Machines - 1508000 on | 9803/3750 9813/0950 9813/1450 | 70 Series Integral Brakes (3 Piece Axles) | 80 Series Hub with Integral Brake |
| Side Engined Agricultural Machines -1508000 on | 9803/3760 9813/0900 9813/1500 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Side Engined Hydrostatic Machines - 527-58 - 1473000 on | 9813/0200 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Rear Engined 1182000 on | 9803/3710 | 70 Series Integral Brakes (3 Piece Axles) | - |
| Rough Terrain Fork Lifts | | | |
| 921, 926, 930, 940 - 600001 on | 9803/5100 | 70 Series Integral Brakes (3 Piece Axles) | |
| Wheeled Loading Shovels | | | |
| 416, 416S, 414S | | 70 Series Integral Brakes (3 Piece Axles) | |



Section 1 - General Information About This Manual

Applicable Machines

Table 5. Transfer Gearbox Procedures

| Machines | Service Manual | Procedures |
|--|-------------------------------------|--|
| | | Section G |
| Backhoe Loaders | | |
| Midi | 9803/9400 | The drop box is part of the rear axle drive head. → Rear Axle Procedures (□ 1-6) |
| Loadalls | | |
| Side Engined - 768740 to 1185999 | 9803/3630 | Bevel Gearbox |
| Side Engined - 1186000 to 1507999 | 9803/3730 | Bevel Gearbox |
| Side Engined - 506-36, 507-42, 509-42, 510-55 - 1402000 on | 9803/3740 9813/1800 | Bevel Gearbox |
| Side Engined Construction Machines - 1508000 on | 9803/3750 9813/0950 9813/1450 | Bevel Gearbox |
| Side Engined Agricultural Machines - 1508000 on | 9803/3760 9813/0900 9813/1500 | Bevel Gearbox |
| Rear Engined 1182000 on | 9803/3710 | 70 Series Drop Box |
| Compact 515-40,520-40 from 1012000 | 9803/3690 | HG 310 |
| Compact 524-50,527-55 from 1068000 to 1069457 | 9803/3690 | HG 700 |



Working Practice

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 earthmoving transmissions.

Renewal of oil seals, gaskets, etc., and any component showing obvious signs of wear or damage is expected as a matter of course. Cleanliness is of the utmost importance when servicing transmission assemblies, be sure to take every precaution to prevent the ingress of dirt and debris. Finally, please remember above all else SAFETY MUST COME FIRST!

Torque Settings

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 6. Fastener Types](#) (□ 1-11).

Table 6. 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

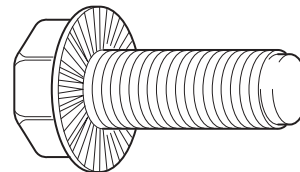


Fig 1.

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

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