



# Service Manual

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**406**  
**407**  
**408**  
**409**

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This Service Manual covers the following machines:

406  
407  
408  
409  
\* 409 Telemaster

407 and 409 Machines commence from Serial Number 632700.

Unless otherwise stated, information for 406 also applies to 407 and information for 408 also applies to 409 and the 409 Telemaster.

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## Introduction

This publication is designed for the benefit of JCB Distributor Service Engineers who are receiving or have received training by the JCB Technical Training Department.

It is assumed that such personnel have a sound knowledge of good workshop practice, safety procedures and general techniques associated with the maintenance and repair of hydraulic earthmoving equipment. Details of such may therefore be omitted from this manual, the primary intention being to convey the more specialised information concerning particular aspects of the machine or component in question.

Renewal of oil seals, gaskets, etc. and any component showing obvious wear or damage is expected. It is also expected that components will be thoroughly cleaned and lubricated where appropriate, also that any opened hose or pipe connections will be blanked to prevent entry of dirt and excessive loss of hydraulic fluid.

For convenience the manual is compiled in sections, e.g. "Hydraulics", "Electrics" etc., but to find details of a specific component or its application, reference should be made to the alphabetical index at the back of the manual.

Except where a maximum and minimum figure is given, torque settings quoted in the text are intended as 'mean' figures which may be varied by + or - 3%. Where no figure is quoted in the text, refer to page 1/1 - 3.

'Left Hand' and 'Right Hand' are as viewed from the rear of the machine looking forward.

### **WARNING**

#### **Fluoroelastomeric Materials**

Certain seals and gaskets (e.g. crankshaft oil seal) on JCB machines contain fluoroelastomeric materials such as Viton, Fluorel and Technoflon. Fluoroelastomeric materials subjected to high temperatures can produce highly corrosive hydrofluoric acid. THIS ACID CAN SEVERELY BURN.

New fluoroelastomeric components at ambient temperature require no special safety precautions.

Used fluoroelastomeric components whose temperatures have not exceeded 300°C require no special safety precautions. If evidence of decomposition (e.g. charring) is found, refer to the next paragraph for safety instructions DO NOT TOUCH COMPONENT OR SURROUNDING AREA.

Used fluoroelastomeric components subjected to temperatures greater than 300°C (e.g. engine fire) must be treated using the following safety procedure. Make sure that heavy duty gloves and special safety glasses are worn:

- 1 Ensure that components have cooled then remove and place material into plastic bags.
- 2 Thoroughly wash contaminated area with 10% calcium hydroxide or other suitable alkali solution, if necessary use wire wool to remove burnt remains.
- 3 Thoroughly wash contaminated area with detergent and water.
- 4 Contain all removed material, gloves etc. used in this operation in sealed plastic bags and dispose of in accordance with Local Authority Regulations.

DO NOT BURN FLUOROELASTOMERIC MATERIALS.

If contamination of skin or eyes occurs, wash the affected area with a continuous supply of clean water or with calcium hydroxide solution for 15-60 minutes. Get medical attention immediately.

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### **WARNING**

#### **Asbestos**

Asbestos dust can damage your lungs. Some engine joints and gaskets may contain asbestos. Take the following precautions when working on them.

- 1 Wear a face mask and gloves.
- 2 Work in a well ventilated area and do not smoke.
- 3 Do not use a rotary wire brush, use a hand scraper.
- 4 Make sure the material to be removed is wet with oil or water to contain loose particles.
- 5 Place all material into plastic bags and dispose of in accordance with local regulations.

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**Note:** New engines DO NOT require a running-in period. The engine/machine should be used in a normal work cycle immediately; glazing of the piston cylinder bores, resulting in excessive oil consumption, could occur if the engine is gently run-in. Under no circumstances should the engine be allowed to idle for extended periods; (e.g. warming up without load). Engines of new machines are filled at the factory with JCB 10W/30 Multigrade oil. This oil should be drained after the first 100 hours operation and the engine filled with the appropriate recommended grade as shown in the lubrication chart. JCB 10W/30 Multigrade should also be used for the first 100 hours operation whenever a new or reconditioned engine is fitted to the machine. After the first 100 hours operation, it is essential that the 10W/30 oil is replaced by the lubricant recommended below.

ITEM	CAPACITY	FLUID/LUBRICANT	SPECIFICATION
<b>Engine Oil</b> -18 to 0° C -10 to 50° C	<b>406</b> 7.2 litres (1.6 UK gal) <b>408</b> 10.7 litres (2.4 UK gal)	JCB Torque Converter Fluid JCB 15W/40 Multigrade	API CD MIL-L-2104C
<b>Gearbox</b>	<b>Syncro Shuttle</b> †19 litres (4.2 UK gal) <b>Powershift</b> †19 litres (4.2 UK gal)	JCB Special Transmission Fluid JCB Special Transmission Fluid	Ford ESN-M2C 33G Ford ESN-M2C 33G
<b>Transfer box</b>	1.3 litres (0.3 UK gal)	JCB HD 90 Gear Oil	API-GL-5, MIL-L-2105C
<b>Axles - Hurth (406)</b> Differential Housing Hubs (Individual)	5.0 litres (1.1 UK gal) 0.2 litres (0.04 UK gal)	JCB Special Gear Oil JCB Special Gear Oil	Ford ESE-M2C 86B Ford ESE-M2C 86B
<b>Axles - JCB</b>	<b>406</b> 5.0 litres (1.1 UK gal) <b>408</b> 16 litres (3.6 UK gal)	JCB Special Gear Oil JCB Special Gear Oil	Ford ESE-M2C 86B Ford ESE-M2C 86B
<b>Hydraulic System</b> Up to 38° C Above 38° C	<b>406</b> 59 litres (13.2 UK gal) <b>408</b> 63 litres (14.1 UK gal)	JCB Special Hydraulic Fluid JCB High Performance Hydraulic Fluid	ISO 32 ISO 46
<b>Brake System</b>	1.2 litres (0.27 UK gal)	JCB Light Hydraulic Fluid  <b>CAUTION: DO NOT USE ORDINARY BRAKE FLUID</b>	ISO 15
<b>Cooling System</b>	<b>406</b> 12.5 litres (2.8 UK gal) <b>408</b> 15.5 litres (3.5 UK gal)	Water/Anti-freeze (see Coolant mixture)	ASTM D3306-74
<b>Fuel System</b>	<b>406</b> 65 litres (14.5 UK gal) <b>408</b> 90 litres (20.2 UK gal)	Diesel Oil (see Types of Fuel)	ASTM D975-66T Nos. 1D, 2D.
<b>Grease Points</b>		JCB Special MPL Grease	Lithium based, No. 2 consistency

**Note:** The total hydraulic system capacity depends on the equipment being used. Fill the system with all rams closed and watch the level indicator.

† The figure quoted is TOTAL system capacity. Use the 'MAX' and 'MIN' marks on the dipstick when refilling the system.

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