

CATALOGUE / MANUAL - REPLACEMENT PAGES

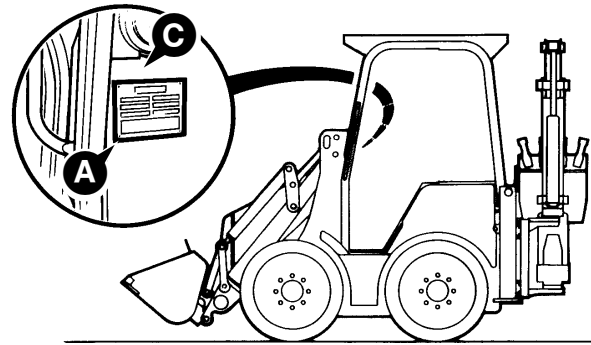
1CX, 208S Service Manual	11th set	Publication No. 9803/8550
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10 - 5B	2	6 - 7	2	12 - 6	2	30 - 3	4
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Machine Identification Plate

The machine identification plate **A** is located as shown. It is stamped with the serial numbers of the major individual units.



203650

* Typical Vehicle Identification Number (VIN)

SLP 1CX S B V E 751601
1 **2** **3** **4** **5** **6** **7**

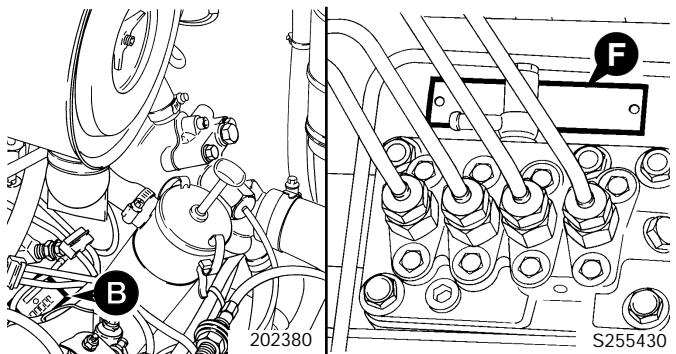
- 1** World Manufacturer Identification
- 2** Machine Model
- 3** Machine Type (S = Standard, H = High-flow)
- 4** Build Type (A = Canopy, B = Cab)
- 5** Year of Manufacture:
 T = 1996 1 = 2001
 V = 1997 2 = 2002
 W = 1998 3 = 2003
 X = 1999 4 = 2004
 Y = 2000 5 = 2005
- 6** Manufacturer Location (E = England)
- 7** Product Identification Number (PIN)

CE		JCB		J.C.BAMFORD EXCAVATORS LTD. ROCESTER, STAFFS, ENGLAND.		EN 29001 REGISTERED 1982301K	
CONSTRUCTOR				MADE IN UK			
Vehicle Identification No.				Product Identification No.			
ENGINE SERIAL No.				WEIGHT			
PUMP SERIAL No.				YEAR OF MANUFACTURE			
MODEL	80/1269/EEC		MODEL	80/1269/EEC			
	POWER KW	R.P.M.		POWER KW	R.P.M.		
160	32.5	2600	185	54.6	2200		
170	35	2800	185 HF	54.6	2200		
170 HF	35	2800	1105	58.1	2200		
160 HF	32.5	2600	1105 HF	58.1	2200		
1CX	35	2800	1CX HF	35	2800		

817/16599 O

Unit Identification

The engine serial number on XUD engines is stamped on an aluminium plate **B** on the side of the cylinder block. On Perkins engines the number is stamped on a label **F** on the right side of the cylinder block.



202380

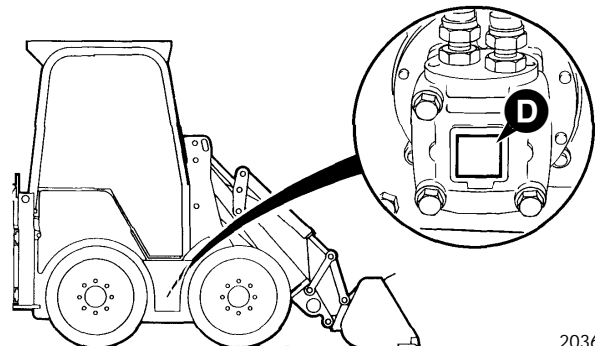
S255430

The chassis serial number **C** is stamped on the front wall of the cab above the machine identification plate.

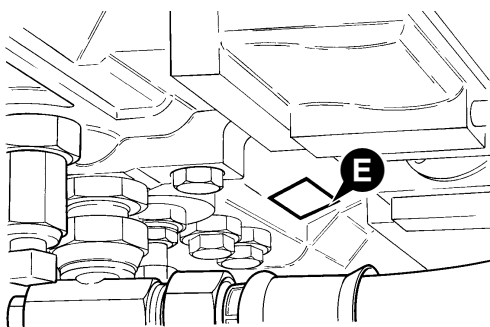
The hydraulic motors have the date of manufacture stamped on a plate as shown at **D**.

The hydraulic pump unit serial number is stamped on a plate on the bottom of the pump as shown at **E**.

If any of the above units are replaced with new ones, the relevant serial number on the Machine Identification Plate will be superseded. Either stamp the plate with the new number or stamp out the old number.



203660

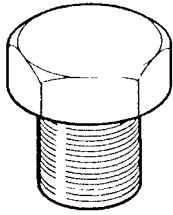


203640

Left Side, Right Side

In this manual, 'left' and 'right' mean your left and right when you are seated correctly in the machine, facing the loader.

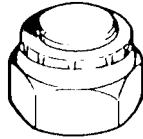
Section E - Hydraulics



193870

Female Cone Blanking Plug

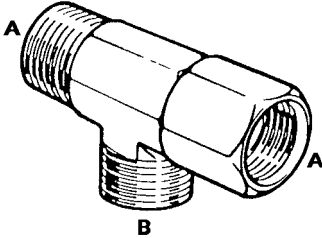
892/00055	1/4 in BSP
892/00056	3/8 in BSP
892/00057	1/2 in BSP
892/00059	3/4 in BSP
892/00060	1 in BSP'T'



193880

Male Cone Blanking Plug

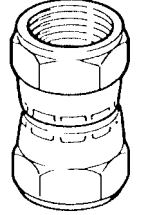
816/00294	1/4 in BSP
816/00189	3/8 in BSP
816/00190	1/2 in BSP
816/00197	5/8 in BSP
816/00196	3/4 in BSP
816/00193	1 in BSP



193890

'T' Adapters

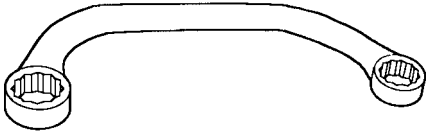
892/00047	3/8 in BSP (A) x 1/4 in BSP (B)
892/00048	1/2 in BSP (A) x 1/4 in BSP (B)
816/50043	3/4 in BSP (A) x 1/4 in BSP (B)
816/60096	3/4 in BSP (A) x 3/4 in BSP (B)



193900

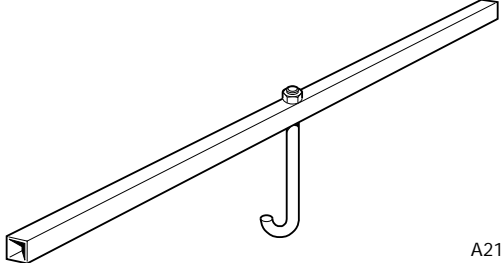
Female Connectors

892/00074	3/8 in BSP x 3/8 in BSP
892/00075	1/2 in BSP x 1/2 in BSP
892/00077	3/4 in BSP x 3/4 in BSP



193920

* 993/99510 Half Moon Spanner - for pump lower mounting bolt



A215880

* 892/00858 Pump support bracket - for engine removal

Fluids, Capacities and Lubricants - except North America

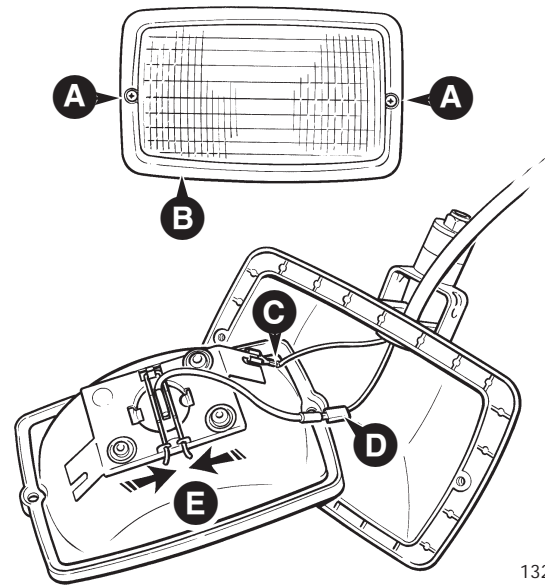
ITEM	CAPACITY	FLUID/LUBRICANT	SPECIFICATION
* Engine Oil XUD 100 series up to m/c no. 807552 400 series from m/c no. 807553	5 litres 8.2 litres 10.5 litres	JCB High Performance 15W/40	ACEA E2:B2:A2, API CF4/SG
Hydraulic System	45 litres	JCB High Performance 10W/30 JCB High Performance 15W/40 (top up only)	ACEA E2:B2:A2, API CF4/SG ACEA E2:B2:A2, API CF4/SG
Cooling System XUD Total coolant cap. Antifreeze 100 and 400 series Total coolant cap. Antifreeze	11 litres 5.5 litres 11 litres 5.5 litres	Water/Anti-freeze (see <i>Coolant Mixtures</i>) JCB Four seasons Antifreeze & Summer Coolant/water (see <i>Coolant Mixtures</i>)	Inhibited Ethanediol AL - 39 11 ASTM D3306, BS6580
Fuel System	45 litres	Diesel oil (see <i>Types of Fuel</i>)	ASTM D975-66T Nos. 1D, 2D
Grease Points	-	JCB Special HP Grease or JCB Special MPL-EP Grease	Lithium complex NLGI No. 2 consistency including extreme pressure additives Lithium based NLGI No. 2 consistency including extreme pressure additives
Chain Case	Fill to level plug	Engine Oil	
Slew Oil up to m/c no. 807225 Slew Oil from m/c no. 807226	Fill to level mark Fill to level plug	JCB HD90 Gear Oil JCB High Performance 10W/30	API GL 5 ACEA E2:B2:A2, API CF4/SG

Electrical system (cont'd)

Changing the Light Bulbs

Worklight Bulb

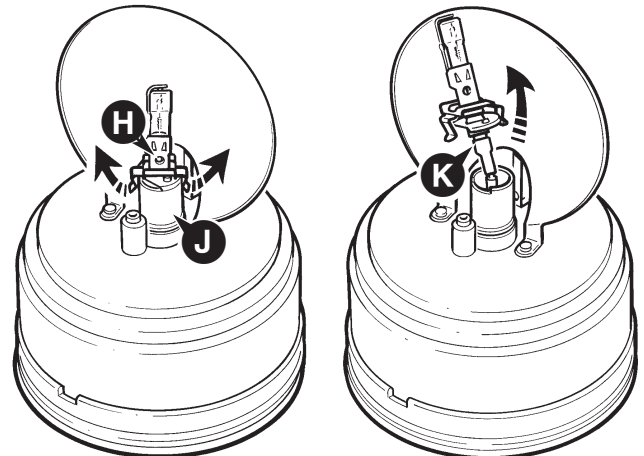
- 1 Support the light unit **B** remove screws **A**.
- 2 Lift and turn light unit **B** to gain access to connectors **C** and **D**.
- 3 Disconnect at **C** and **D**.
- 4 Remove the bulb by releasing clips **E**.
- 5 **Do not touch the new bulb with bare fingers.** Fit the new bulb.
- 6 Reassemble the light unit in the reverse order.



132930

Rotating Beacon Bulb

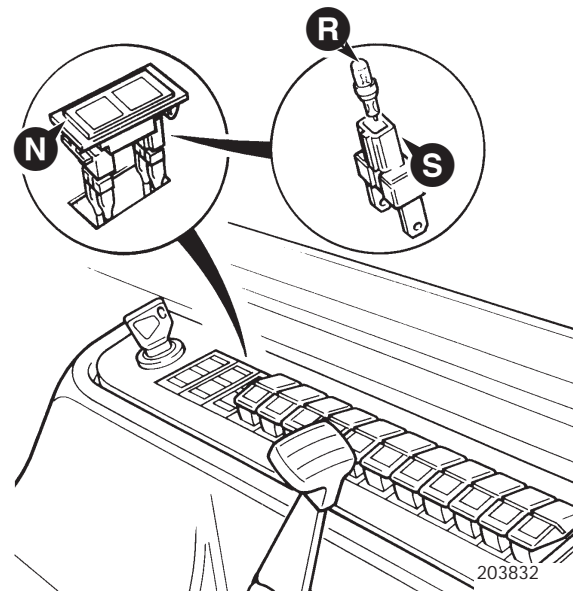
- 1 Remove the three screws holding the cover and remove the cover.
- 2 Release spring clip **H** and ease the bulb from its holder **J**.
- 3 Disconnect the bulb at **K**.
- 4 **Do not touch the bulb with bare fingers.** Fit the new bulb. Make sure that the bulb is seated correctly and the spring clip **H** is secure.
- 5 Reassemble the light unit in the reverse order.



133010

* Warning Lights

- 1 With a fine screwdriver ease the Warning Light **N** from its socket in the control panel.
- 2 The bulb holder **S** can then be pulled from the back of the Warning Light and the bulb will come with it.
- 3 The bulb **R** is a straight pull from the holder.
- 4 Fit the new bulb.
- 5 Re-assemble the Warning Light in the reverse order.



203832

Engine (cont'd)

* Draining the Fuel Filter - 100 & 400 series engines (cont'd)

14 Prime the Filter.

Early Machines

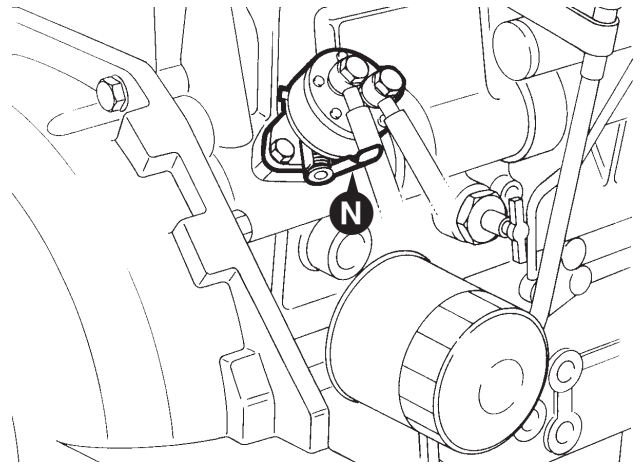
Slacken bleed screw **M** and operate the lift pump priming lever **N** until fuel spurts from the loosened connection with no entrapped air.

Note: If no fuel is moved when the fuel lift pump priming lever **N** is operated, then the pump diaphragm may have rested in the 'maximum lift' position. To move the diaphragm, use the starter key to turn the engine, then try the priming lever again.

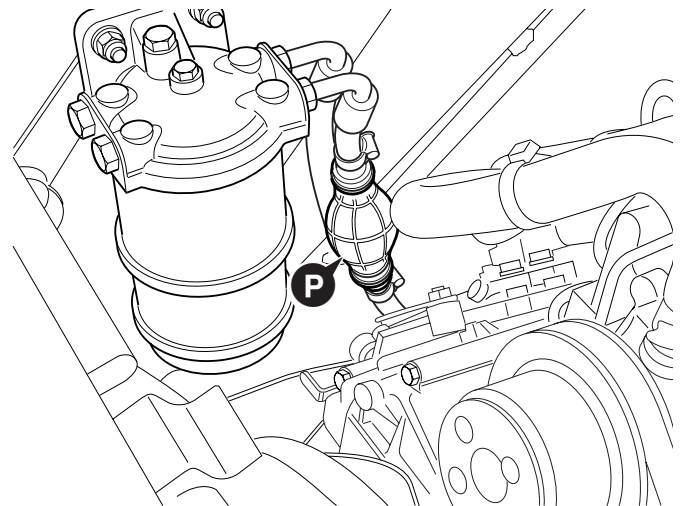
Later Machines

Slacken bleed screw **M** and operate the priming pump **P** by squeezing the body until fuel spurts from the loosened screw with no entrapped air.

15 Tighten the bleed screw and check the filter for leaks. Tighten connections or change seals as required.



S255860



329160

Removal

Remove the bucket or other attachment from the machine and park the machine on clean level ground. Place the excavating end in the position shown.

Stop the engine and vent hydraulic pressure from the system (see page E/2 - 1).

! WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses or couplings, vent the pressure trapped in the hoses in accordance with the instructions given in this publication.

HYD 1-5

Disconnect and plug the auxiliary hoses, marking the hoses to ensure correct reconnection. Remove the auxiliary hose bracket **A** from the dipper. Disconnect and plug the crowd ram feed and return hoses, marking the hoses to ensure correct reconnection.

* Remove the bolt retaining the dipper ram eye end pivot pin **B**. Supporting the ram, drift out the dipper ram eye end pivot pin. Allow the ram to rest on the boom.

! 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.

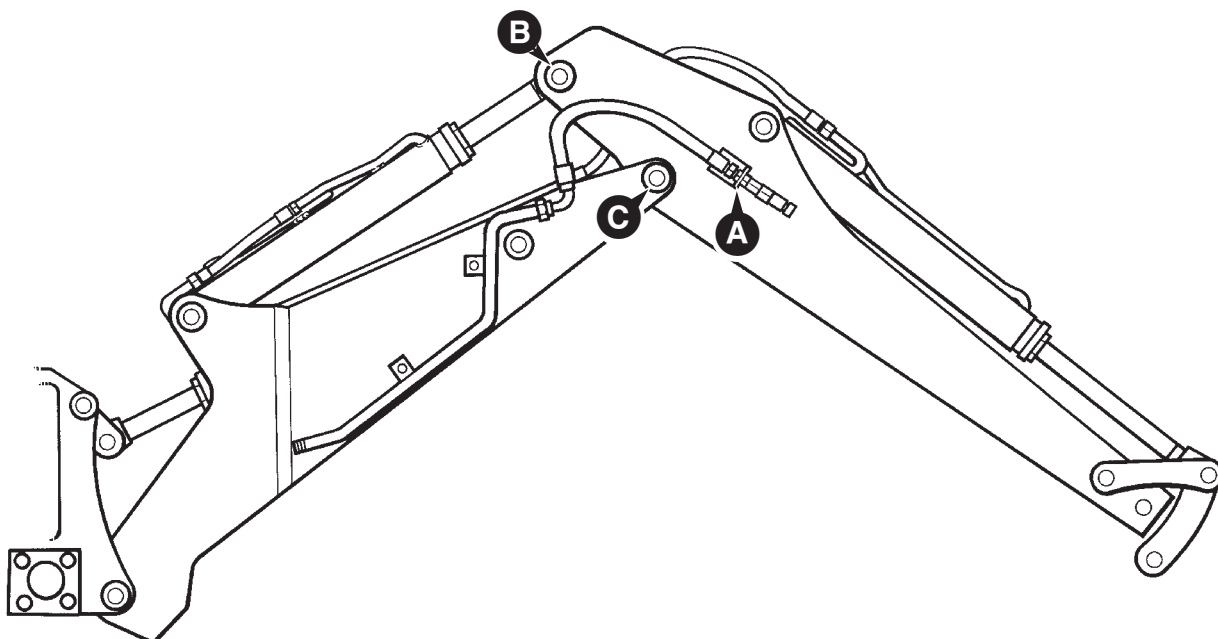
INT-1-3-7

Remove the locking pins (2 off) for the dipper pivot pin **C**. Supporting the weight of the dipper, drift out the pivot pin. The dipper can now be manoeuvred from the machine using the lifting equipment. Place the dipper on a clean dry surface.

Replacement

Replacement is a reversal of the removal procedure. Grease all pins and securing bolts with JCB Special MPL grease.

Reconnect all hoses and bleed the hydraulic system.



205450

Use Of Multimeter

* In order to obtain maximum benefit from the fault finding information contained in Section C it is important that the technician fully understands the approach to fault finding and the use of the recommended test equipment, in this case an AVO 2003 digital multimeter, or a moving pointer (analogue) multimeter. The approach is based on a fault finding check list. In tracing the fault from the symptoms displayed you will be directed to make measurements using a multimeter.

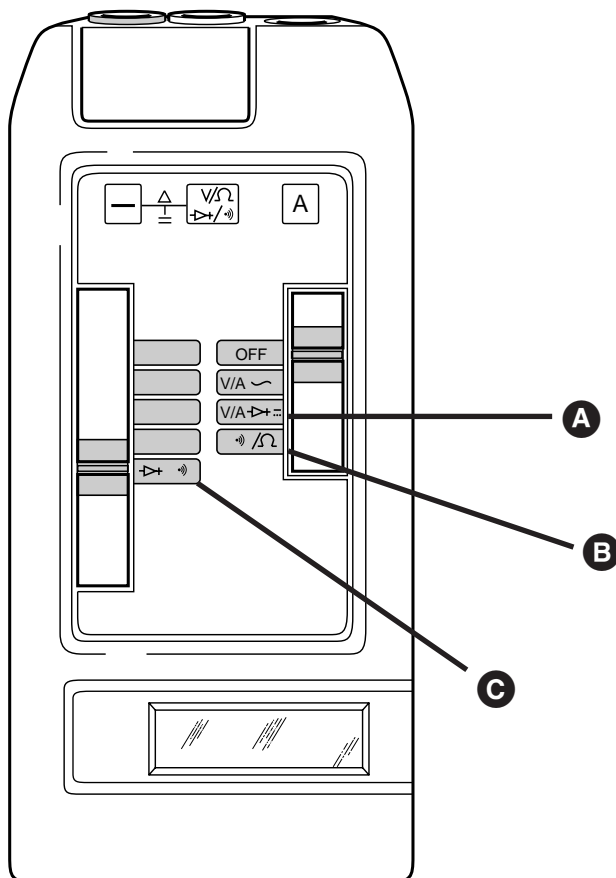
These instructions are intended to cover the use of the recommended multimeters.

- 1 Make sure that the test leads are plugged into the correct sockets. The black test lead should be plugged into the black socket (sometimes, this socket is also marked by a " - ", or "E" or marked as "COMMON" or "COM"). The red test lead should be plugged into the red socket marked with "+", "V" or " ".
- 2 When making measurements ensure that the test probes have a good clean contact with bare metal, free from grease, dirt, and corrosion as these can cause a false reading.
- 3 When measuring voltage:

Make sure that the correct range is selected, that is set the selector to a value equal to or greater than that you are about to measure. e.g. If asked to measure 12 Volts, set the selector to the 12V range. If there is no 12V range, set the selector to the next range higher, 20V for instance.

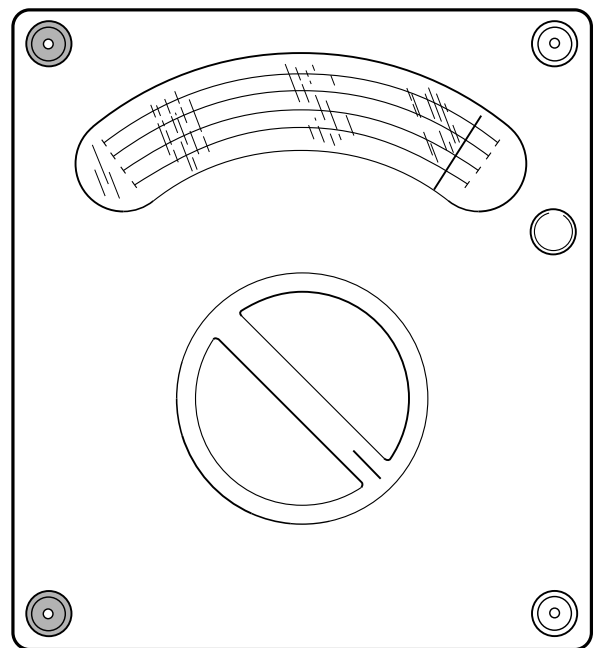
If the meter is set to a range that is too low, it may be damaged.
e.g. setting to the 2V range to measure 12V.

AVO 2003



A171900

A typical analogue meter



A171890

Removal and Replacement

* XUD Engines

Disconnect the battery negative lead.

Disconnect the cables from main starter terminal **A** and solenoid terminal **B**. Unscrew securing bolts (3 off) and withdraw the starter.

Replacement is a reversal of the removal procedure.

Torque Settings

Securing bolts **C** 34 Nm (25 lbf ft, 3.5 kgf m).

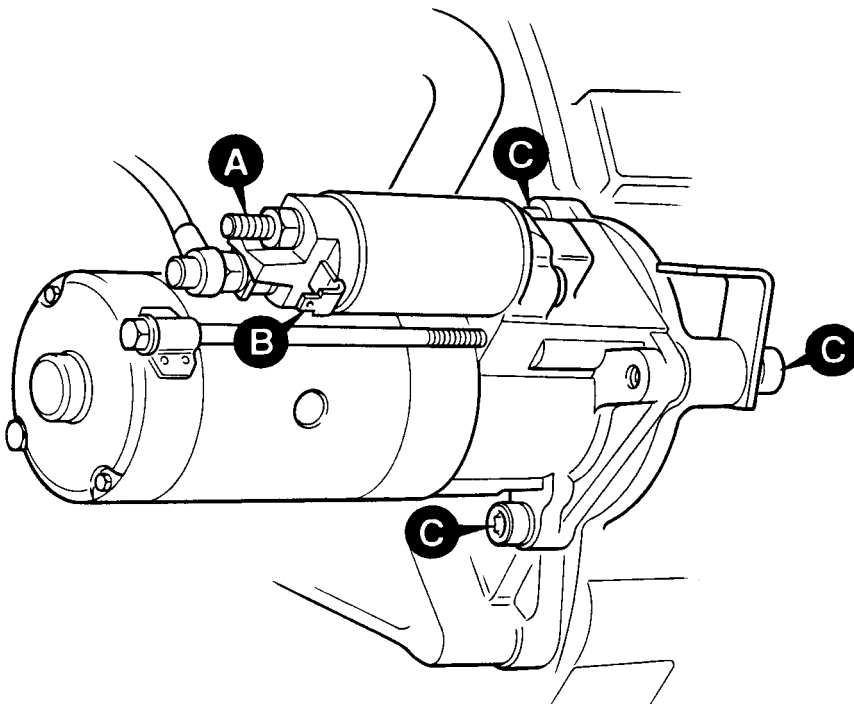
Service Procedures

Servicing this equipment is not recommended. Should faults occur, then the starter motor should be changed for a Service Replacement.

Removal and Replacement

* 100 and 400 Series Engines

* For Removal, Replacement and Servicing procedures refer to 100 Series Engine Workshop Manual (JCB part no. 9806/2100) or 400 Series Engine Workshop Manual (JCB part no. 9806/2190).



Hand and Foot Throttles

Description

The combined foot and hand throttle controls are designed to operate in conjunction with each other. Once the engine has been started, the hand throttle can be set to give an engine speed suitable for the operations to be performed. This hand setting can be overridden by the foot throttle to give a speed in excess of that set by the hand throttle, up to the maximum for the engine as set in the factory. However, when the foot throttle is released, the engine speed reverts to that set by the hand control.

Removal

Undo the connector **A** to expose the hand throttle cable connection. Disconnect the cable by twisting and pulling. The hand throttle may then be removed by undoing nut **B** and lifting the unit from the instrument panel.

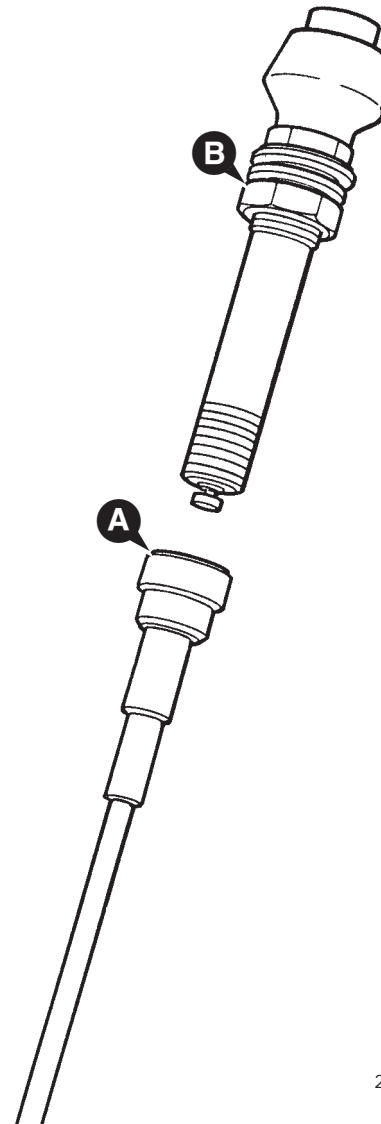
Lift the floor panel on which the foot throttle is mounted until the underside of the foot throttle is exposed, then disconnect the linkages at the white plastic clip **C** and the black clip **D**. Remove the screws (3 off) securing the foot throttle to the floor panel, lift off the unit and remove.

Replacement

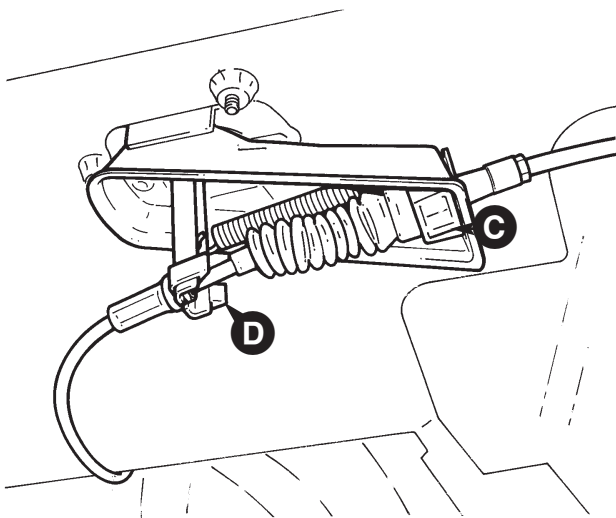
Replacement is a reversal of the removal procedure.

Adjustment

The maximum flow and speed adjustments are sealed and should only be adjusted by a specialist agent. Only idling and non-stalling settings may be adjusted (see page D/1 - 2).



201540



204280

Hydraulic Fluid Quality

Construction machinery uses a large volume of fluid in the hydraulic system for power transmission, equipment lubrication, rust prevention and sealing.

According to a survey conducted by a pump manufacturer, seventy per cent of the causes of problems in hydraulic equipment were attributable to inadequate maintenance of the quality of the hydraulic fluid.

Therefore, it is obvious that control of the quality of the hydraulic fluid helps prevent hydraulic equipment problems and greatly improves safety and reliability. Furthermore from an economic angle it extends the life of the hydraulic fluid if quality is maintained.

Effects of Contamination

Once inside the system, hydraulic circuit contaminants greatly effect the performance and life of hydraulic equipment. For example, contaminants in a hydraulic pump develop internal wear to cause internal leakage and hence lower discharges. Wear particles generated will circulate with the hydraulic fluid to cause further deterioration in the performance of this and other equipment.

Contaminants also enter principal sliding sections of the equipment causing temporary malfunction, scuffing, sticking and leakage and can lead to major problems.

The main contaminants can be classified as follows:-

- 1 **Solid Particles** - sand, fibres, metallic particles, welding scale, sealing materials and wear particles etc.
- 2 **Liquid** - usually water and incompatible oils and greases.
- 3 **Gases** - Air, sulphur dioxide etc. which can create corrosive compounds if dissolved in the fluid.

These contaminants can appear during manufacture, assembly and operation.

Contaminant Standards

Dirt that damages your system is in many cases too small to be seen with the eye. The particle size is measured in microns.

1 micron = 0.001 mm (0.0000394 in)

Listed below are a few typical comparisons:-

Red Blood Cell = 8 microns (0.008 mm, 0.000315 in)

Human Hair = 70 microns (0.07 mm, 0.00275 in)

Grain of Salt = 100 microns (0.1 mm, 0.00394 in)

Smallest particle visible to the naked eye is 40 microns (0.00157) approximately.

Standards will often be quoted to ISO (International Standards Organisation) for which literature can be obtained.

Filters

The filter assembly fitted to all product ranges is designed to filter all the contamination that is generated through use to the required level of cleanliness. It must be serviced to the requirements of the machine Service Schedules.

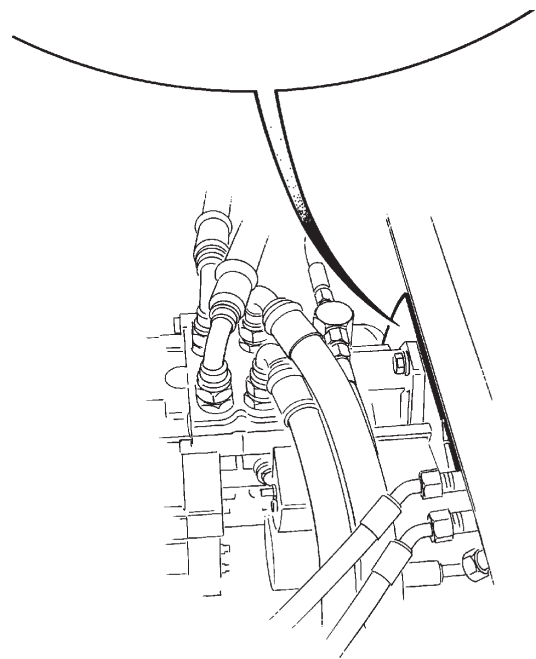
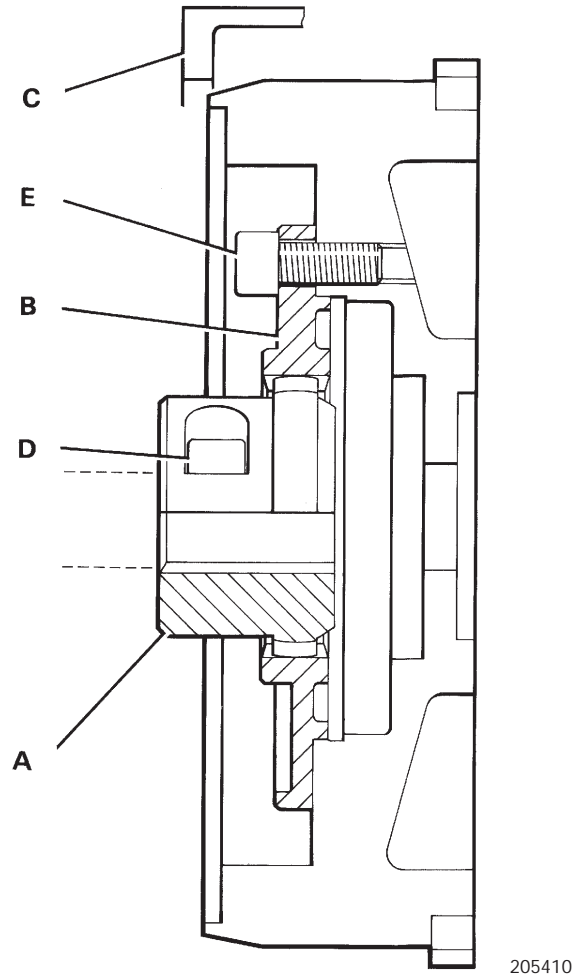
Pump/Engine Coupling

This is a gear type flexible coupling comprising an outer coupling **B**, bolted to the engine drive plate, and an inner coupling **A** clamped to the input shaft of the pump unit. Both are contained within casing **C**, to which the pump unit is bolted.

The outer coupling **B** is bolted to the engine with four capscrews **E**. The inner section **A** is tightened onto the pump shaft spline with cap screw **D**.

* Coat threads of capscrew **D** with JCB Threadlocker and Sealer and torque tighten to 47 Nm (35 lbf ft, 4.8 kgf m).

Coat threads of capscrews **E** with JCB Threadlocker and Sealer and torque tighten to 28 Nm (21 lbf ft, 2.8 kgf m).



Checking for Faulty Pump or Motor

If the transmission operates or is faulty on one side only then swop the motor feed hoses to check if the fault is with the pump or motor. If, after the hose swop, the suspect motor then operates the fault lies in the relevant pump unit. If the motor still does not operate then the motor itself is faulty.

Proceed as follows:

- 1 Stop the engine.
- 2 Remove the front floorplate to expose the pump.
- 3 To ensure correct replacement after the test is complete, mark the motor feed hoses **A** and **B** for the left hand motor, **C** and **D** for the right hand motor.
- 4 Swop the motor feed hoses from one side to the other as indicated in the illustration, i.e. swop hoses **A** and **C** then swop hoses **B** and **D**.

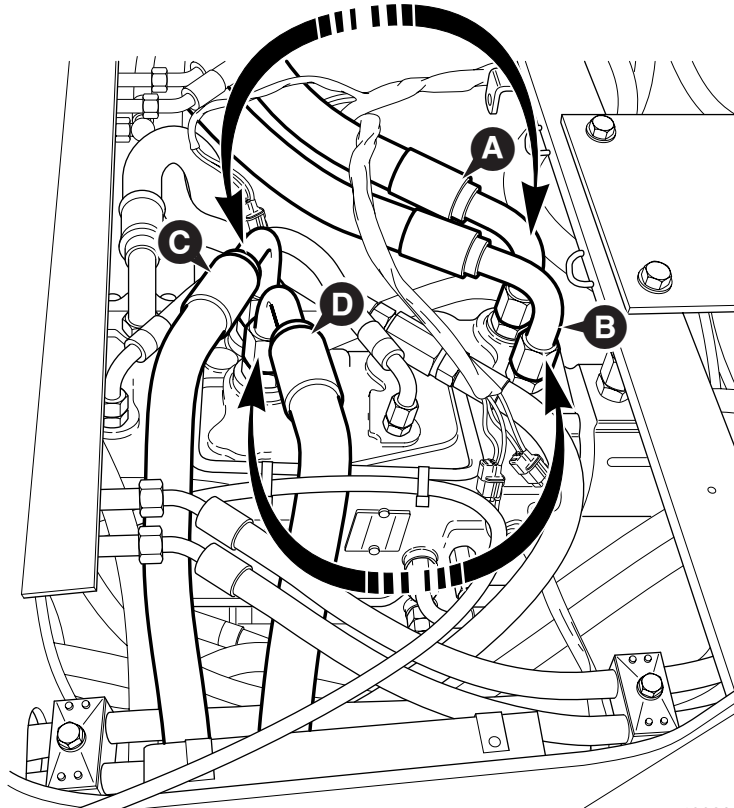
- 5 Restart the engine and re-check the operation of left and right motors. Note that when the left motor is selected the right motor should now drive and the left motor should drive when the right motor is selected. If the previously faulty motor now functions then the fault lies in the relevant pump unit. If the motor still does not operate then the motor itself is faulty.

! WARNING

Hydraulic Fluid

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.

INT-3-1-10/1



422980

Pressure Testing - Main Relief Valve (M.R.V.) - In Situ

Connect a 0 - 400 bar (0 - 6000 lb/in², 0 - 422 kg/cm²) pressure gauge to test connector **A** located on the right-hand end of the loader valve block.

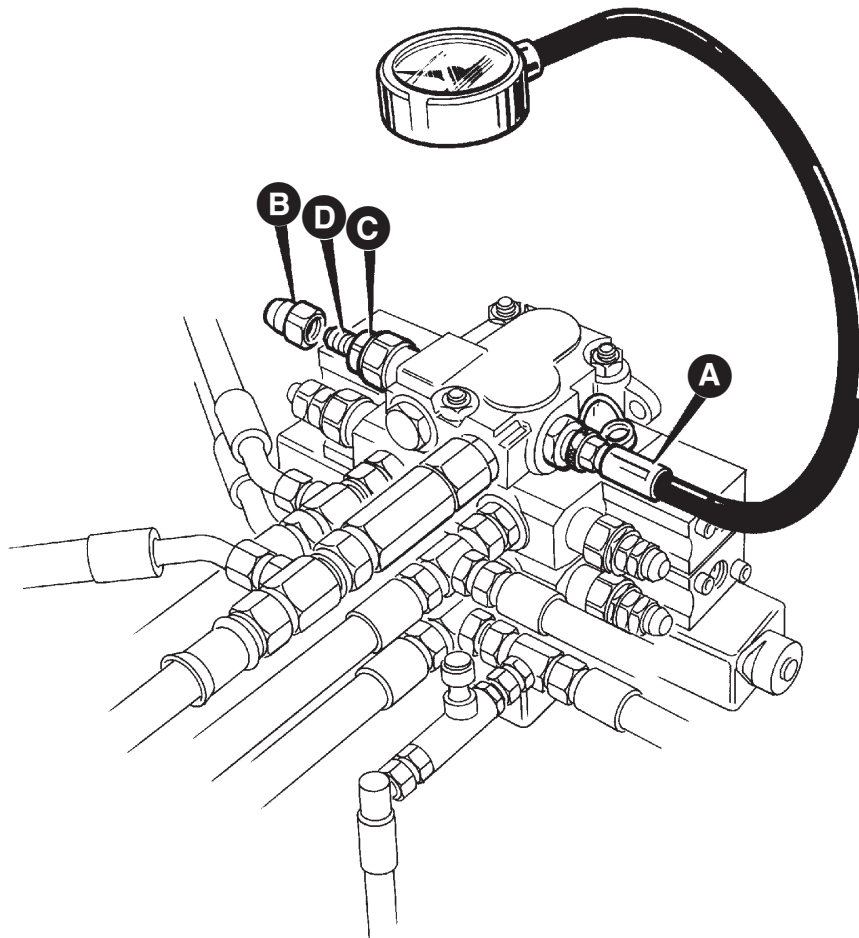
* With the engine running at 1500 rev/min, check the M.R.V. setting by lowering the loader arm until the rams are fully closed and noting the maximum gauge reading. **Keep clear of the loader arm.** The maximum pressure should be as stated in Technical Data.

If the pressure is incorrect, remove dome nut **B**, slacken locknut **C** and adjust screw **D**. Turn it clockwise to increase pressure and anti-clockwise to decrease the pressure. When the pressure is correct, tighten the locknut.

Note that the pressure setting is stamped on the body of the valve.

Torque Settings

Item	Nm	kgf m	lbf ft
B	5.4 - 8.2	0.55 - 0.83	4 - 6
C	5.4 - 8.2	0.55 - 0.83	4 - 6



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Removal and Replacement

⚠ WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses or couplings, vent the pressure trapped in the hoses in accordance with the instructions given in this publication.

HYD-1-5

Before working on the hydraulic system ensure that the engine is switched off and the starter key removed.

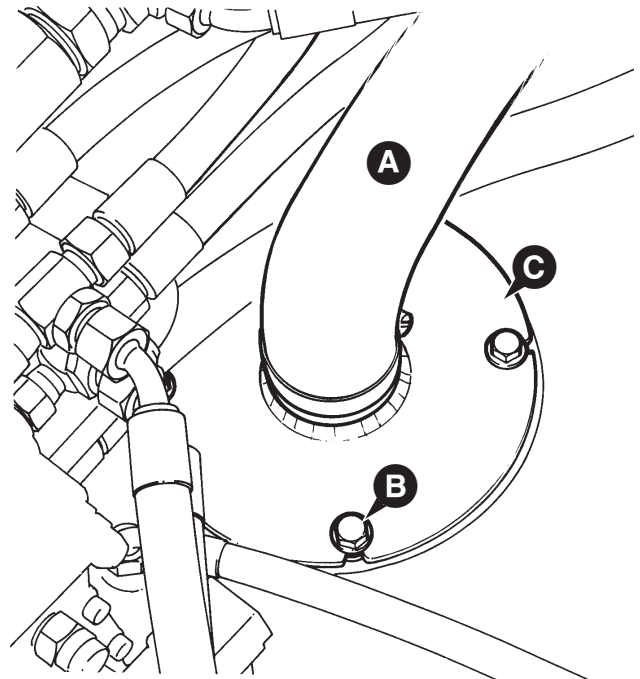
- 1 Vent the hydraulic pressure (see page E/2 - 1).
- 2 Remove the battery compartment cover and remove the hydraulic filler cap.
- 3 Remove the rear floor plate to gain access to the hydraulic tank cover plate.
- 4 Remove the hydraulic tank drain plug at the rear of the tank and drain the hydraulic oil to below the level of the tank cover plate.

Note: Always drain into a suitable container.

- 5 Loosen worm drive clip and withdraw hose **A** from cover plate.
- 6 Unscrew bolts **B**, remove cover plate **C** together with its gasket.
- 7 Unscrew and remove the main suction strainer, which is screwed into a bulkhead connector inside the tank. Wash in a suitable solvent and allow to dry.

Note: A new strainer should be similarly washed before fitting, to remove the protective coating.

- 8 Reassemble in reverse order using a new gasket coated with Red Hermetite. Refill the tank with the correct fluid (see page 3/1 - 1).



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