Service Manual

JCB Robot 160, 170 and 180

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Fluids, Lubricants and Capacities

ITEM	CAPACITY Litres (Gal)	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Engine (Oil)	8.4 (1.8)	JCB Engine Oil EP 15W/40	SAE15W/40, ACEA E5/B3/A3, API CH-4/SG
Hydraulic System	30 (6.6)	JCB High Performance 10W/30 JCB High Performance 15W/40 (top up only)	ACEA E2:B2:A2, API CF-4/SG ACEA E2:B2:A2, API CF-4/SG
Cooling System - Total Coolant - Antifreeze	 8 (1.8) 4 (0.9)	JCB High Performance Antifreeze and Inhibitor/Water. ⇨ *Coolant Mixtures (3-12)*	ASTM D6210
Fuel Tank	80 (17.6)	Diesel Oil. ⇨ *Types of Fuel (3-40)*	
Grease Points		JCB Special HP Grease or JCB Special MPL-EPGrease	Lithium complex NLGI No.2 consistency including extreme pressure additives. Lithium based NLGI No. 2 consistency including extreme pressure additives.
Chain Case	17 (3.8)	Engine oil	

Coolant Mixtures

T3-008_3

Check the strength of the coolant mixture at least once a year, preferably at the start of the cold period.

Replace the coolant mixture according to the intervals shown in the machine's Service Schedule.

⚠ WARNING

Antifreeze can be harmful. Obey the manufacturer's instructions when handling full strength or diluted antifreeze.

7-3-4-4_1

You must dilute full strength antifreeze with clean water before use. Use clean water of no more than a moderate hardness (pH value 8.5). If this cannot be obtained, use de-ionized water. For further information advice on water hardness, contact your local water authority.

The correct concentration of antifreeze protects the engine against frost damage in winter and provides year round protection against corrosion.

The protection provided by JCB High Performance Antifreeze and Inhibitor is shown below.

50% Concentration (Standard)

Protects against damage down to -40 °C (-39 °F)

60% Concentration (Extreme Conditions Only)

Protects against damage down to -56 °C (-68 °F)

Important: *Do not exceed a 60% concentration, as the freezing protection provided reduces beyond this point.*

If you use any other brand of antifreeze:

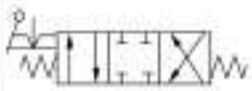
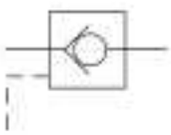
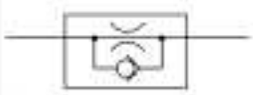
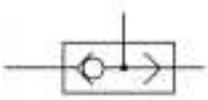
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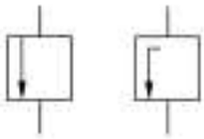
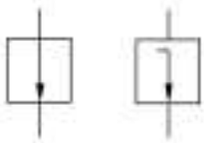
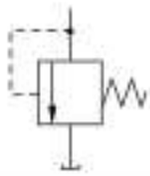
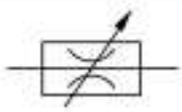
Problem Solving

Symptom	Possible cause
Engine will not turn over	Check state of charge and voltage of battery
	Check integrity of 80 amp primary fuse
	Check battery leads are tightly fastened
	Ensure High-flow system (if fitted) is switched off
	Check connections on ignition switch
	Check connections on neutral start relay
	Check connection on starter motor solenoid
Engine will turn over but not run	Check fuse B8 (5 amp)
	Check connection on ESOS (engine shut off solenoid)
Loader arm will not move	Ensure ignition switch is on
	Ensure isolator bar and armrest are down
	Check fuse B6 (15 amp)
	Check connections at operation solenoid
Horn will not operate	Check integrity of 80 amp primary fuse
	Check fuse C4 (5 amp)

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Table 4. Control Valves

	Used to enclose several valves indicating they are supplied as one unit
	3-Position, 4-port spring centered pilot operated valve
	3-position, 6-port spring centered pilot operated valve
	3-Position, 4-port spring centered solenoid & pilot pressure operated valve
	3-Position, 4-port spring centered detent hand operated valve
	Non-return valve
	Non-return valve with back pressure spring
	Pilot operated non-return valve
	One way restrictor
	High pressure selector (shuttle valve)

	Throttling orifice - normally closed
	Throttling orifice - normally open
	Relief valve
	Variable restrictor

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Outer Track Rubber - Tearing/Cuts

Cause:

1 Cuts on the lug are often due to particularly sharp materials such as stones, the problem is particularly evident if using sharp driving techniques on demolition type ground (e.g. stones, debris etc.).

Prevention:

1 The life expectancy of a track is greatly reduced by working on a site where sharp and pointed materials are numerous. Operate the machine with attention to the ground's surface in rough terrain, e.g. demolition sites, rocky ground etc.



Fig 14.

Additional Notes:

You can do less damage by driving slowly on hard surfaces. Small cuts on the lug do not prevent the track from being used. When the cut goes deeper down and reaches the steel cord or the core bar, the track must be repaired. If a lug is pulled out, the track can be used but the grip on muddy surfaces will be greatly reduced.

Outer Track Rubber - Fast Abrasion

Cause:

1 Sharp driving on hard and abrasive surfaces, for example concrete, asphalt etc.

2 Operation on surfaces where the temperature is unusually high, for instance, travelling over freshly laid asphalt.

Prevention:

1 Operate the machine with care, avoid making quick and repeated turns.

2 Do not stay too long on very hot surfaces. On the other hand, the track is safe if you just go across this area.



Fig 15.

Additional Notes:

A track can still be used if the lug is higher than 5mm, otherwise the track must be replaced. Refer also to warranty pro-rata use scale.

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Shovel Tilt

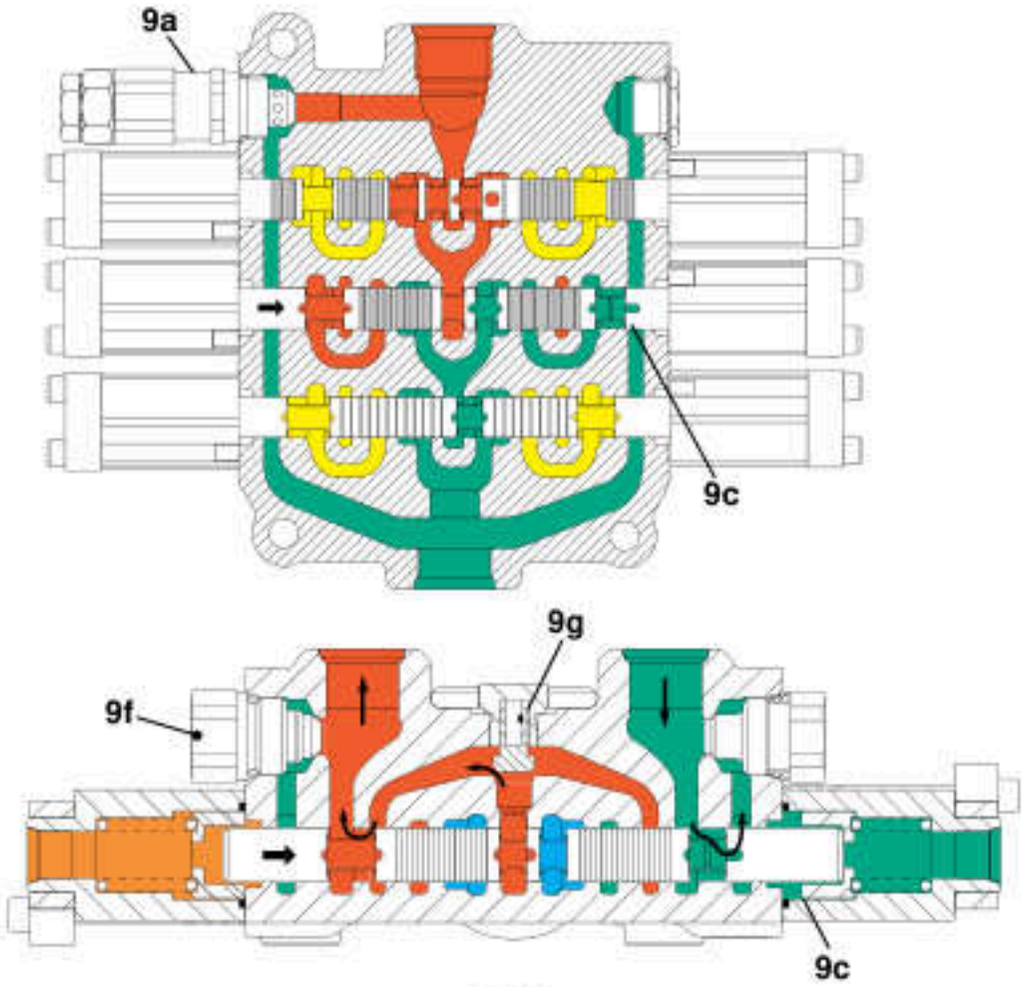


Fig 18.

Fig 18. (E-22) shows the shovel tilt service selected. On servo machines, when the joystick is moved servo oil is supplied to the appropriate end of the tilt spool **9c** which moves to select the service. On manual machines the spool is operated mechanically by movement of the control lever.

The oil entering the valve block flows past the first (lift) spool and is then diverted by the tilt spool **9c** to load hold check valve **9g** which opens only when the supply oil pressure rises above the service line pressure. This prevents unwanted ram movement due to a possible momentary fall in line pressure. The pressurised oil then flows out of the valve block to operate the tilt ram.

Oil returning from the opposite end of the tilt ram enters the valve block and flows past spool **9c** into the exhaust gallery and back to tank.

Main Relief Valve **9a** is preset to open at a specific pressure. As the inlet oil pressure rises to the preset level, e.g. when the ram reaches the end of its travel, the Main Relief Valve opens, dumping excess oil directly into the exhaust gallery.

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