OPERATOR'S MANUAL



BACKHOE LOADER
3CX

EN - 9831/2700 ISSUE 3 - 05/2016

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE

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Contents **Page No.**

Acronyms Glossary viii

Introduction
About this Manual
Model and Serial Number 1
Using the Manual 1
Left-Hand Side, Right-Hand Side 1
Cross References 1
Location of Manual 1
Safety
Safety - Yours and Others 2
Safety Warnings 2
General Safety 3
Clothing and Personal Protective Equipment (PPE) 4

About the Product
Introduction
General 5
Name and Address of the Manufacturer 5
Product Compliance 5
Description
General 6
Intended Use 6
Log Moving/Object Handling 6
Optional Equipment and Attachments 6
Danger Zone 6
Main Component Locations 7
Product and Component Identification
Machine 8
Engine 8
Axle 9
Gearbox 10
Operator Protective Structure 10
Hydraulic Pump 11
Safety Labels
General 12
Safety Label Identification 13
Operator Station
Component Locations 15
Interior Switches
Ignition Switch 17
Multi-Purpose Switch 17
Cab Interior Light 18
Console Switches
General 19
Road Lights 19
Hazard Warning Lights 19
Front Work Lights 19
Rear Work Lights 20
Four Wheel Drive Selector 20

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Safety

Safety - Yours and Others

All machinery can be hazardous. When a machine is correctly operated and maintained, it is a safe machine to work with. When it is carelessly operated or poorly maintained it can become a danger to you (the operator) and others.

In this manual and on the machine you will find warning messages, read and understand them. They inform you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB dealer to explain them.

Safety is not just a matter of responding to the warnings. All the time you are working on or with the machine you must be thinking of what hazards there might be and how to avoid them.

Do not work with the machine until you are sure that you can control it.

Do not start any work until you are sure that you and those around you will be safe.

If you are not sure of anything, about the machine or the work, ask someone who knows. Do not assume anything.

Remember:

- Be careful
- Be alert
- Be safe.

Safety Warnings

In this manual and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

The signal word 'DANGER' indicates a hazardous situation which, if not avoided, will result in death or serious injury.

The signal word 'WARNING' indicates a hazardous situation which, if not avoided, could result in death or serious injury.

The signal word 'CAUTION' indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

The signal word 'Notice' indicates a hazardous situation which, if not avoided, could result in machine damage.

The safety alert system (shown) also helps to identify important safety messages in this manual and on the machine. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

Figure 2. The safety alert system



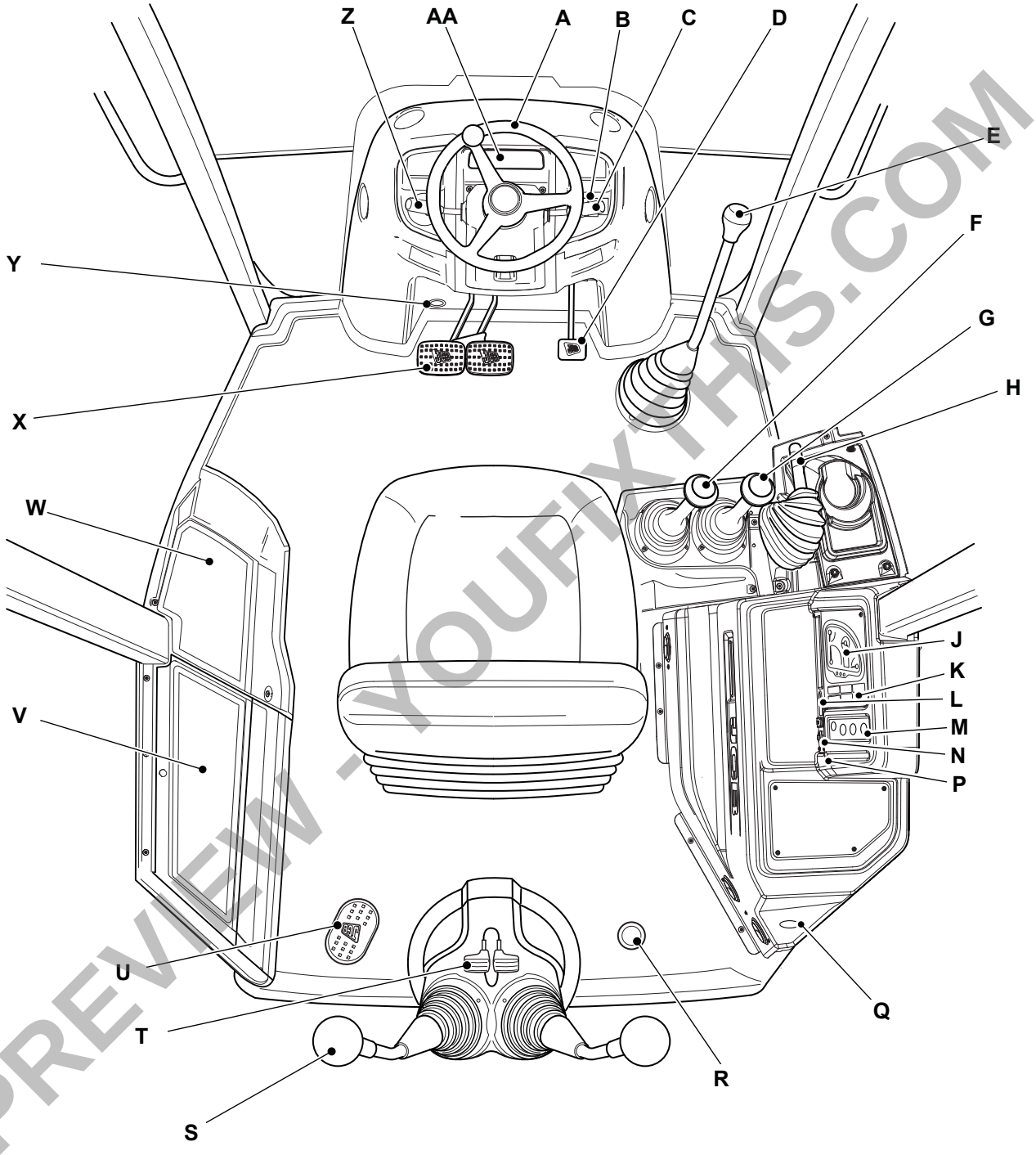
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Operator Station

Component Locations

Figure 11.



A Steering wheel
B Console switches
C Multi-purpose switch
D Accelerator pedal
E Gear lever
F Loader controls
G Auxiliary circuit controls
H Park brake lever
J Instrument panel
K Console switches
L Auxiliary power socket
M HVAC (Heating Ventilation Air Conditioning) controls
N Starter switch
P Hand throttle lever
Q Boom lock pull knob
R Rockbreaker switch (if fitted)
S Excavator controls
T Stabiliser controls

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Operation
Introduction

General

The aim of this part of the manual is to guide the operator step-by-step through the task of learning how to operate the machine efficiently and safely. Read the Operation section through from beginning to end.

The operator must always be aware of events happening in or around the machine. Safety must always be the most important factor when you operate the machine.

When you understand the operating controls, gauges and switches, practice using them. Drive the machine in an open space, clear of people. Get to know the 'feel' of the machine and its driving controls.

Do not rush the job of learning, make sure you fully understand everything in the Operation section. Take your time and work efficiently and safely.

Remember:

- Be careful.
- Be alert.
- Be safe.

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2. Set all switches in the cab to off.
3. Lower the loader shovel to the ground, if it is not already there. It will lower itself under its own weight when you operate the lever. Operate the lever carefully to control the rate of descent. If your machine is fitted with hose burst protection valves you will not be able to lower the shovel. In this case install the safety strut.

   Refer to: Operating Levers/Pedals (Page 71).
4. Get access to the battery.

   Refer to: Access Apertures (Page 159).
5. Connect the booster cables:
   5.1. Connect the positive (+) booster cable to the positive (+) terminal on the machine battery. Connect the other end of this cable to the positive (+) terminal of the booster supply.
   5.2. Connect the negative (-) booster cable to a good frame earth on the machine, away from and below the battery. A good frame earth is a part of the machine frame, free from paint and dirt. Do not use a pivot pin for an earth.
   5.3. Connect the other end of this cable to the negative (-) terminal on the booster supply.
6. Start the engine.
7. Disconnect the booster cables:
   7.1. Disconnect the negative (-) booster cable from the machine frame earth. Then disconnect if from the booster supply.
   7.2. Disconnect the positive (+) booster cable from the positive (+) terminal on the battery. Then disconnect it from the booster supply.

Retrieval

Do not tow a machine unless there is no alternative. Remember that further damage might be caused to the machine by towing it. If at all possible repair the machine where it stands.

Towing a machine too far or too fast can damage the transmission or structural members. Do not tow the machine further than necessary. Move the machine at a speed of 3km/h (1.9mph) to a convenient location for repair or access to a trailer for transportation.

If towing is the only alternative, one towing machine must be coupled to the front of the disabled machine. Another towing machine must be coupled to the rear of the disabled machine, to provide the braking power.

Always transport the machine on a suitable trailer if long distance moving is required.

In the event that towing the machine to a safe location is unavoidable follow the procedure below :

- Before towing, make sure that both towing slings have the correct strength for the vehicle that is to be towed, this must be 1.5 times more than the gross machine weight per sling.
- It is recommended to use shielding on both machines to protect the operators if the tow line breaks.
- Keep the minimum tow line angle from the straight ahead position. Do not exceed a 20° angle from the straight ahead position.
- Prevent any quick machine movement. This could overload the tow line, gradual and steady movements will be required for a safe retrieval.
- Make sure that the towing machine has enough weight, power and braking capacity to perform the towing procedure safely.

Block the loader arms before attaching the towing slings.

Maximum permissible towing force is 154kN

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Side-Shift Carriage

General

Kingpost Clamps

On Sideshift machines, the kingpost assembly must be clamped to the cross rails before you start any excavation work.

Release Clamps

Press the switch to release the clamps, the switch light should be illuminated. Refer to Figure 113.

Tighten Clamps

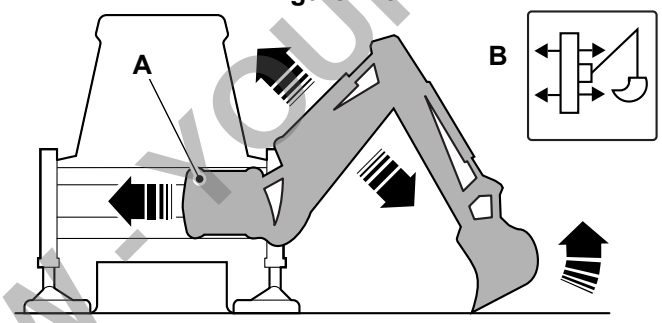
Press the switch off to enable the clamps to tighten.

Manual Sideshift

Make sure that the kingpost rails are clear of debris before sideshifting the excavator.

1. Use the stabilisers to set the machine level and stable, with the kingpost vertical.
2. Set the bucket on the ground, straight behind the machine.
3. Release the clamps, press the kingpost clamp switch to the on position, the switch light should be illuminated.

Figure 113.



A Kingpost **B** Kingpost clamp switch

4. Loosen the kingpost on its rails, operate the boom up and down for few times.
5. Raise and slew the excavator directly to one side of the machine. Slew to the left if you want to sideshift to the right. Slew to the right if you want to sideshift to the left.
6. Set the bucket on the ground, with the dipper as illustrated Refer to Figure 113.
7. Open the bucket. As the bucket opens, the kingpost will be pushed across the back of the machine. If the kingpost sticks in mid-travel, raise or lower the boom slightly to keep the kingpost vertical to the rails.
8. Once the kingpost is in the required position, tighten the clamps by pressing the kingpost clamp switch to the off position.

Pressure generated in the excavator services will make sure the clamps fully engage. Before you operate the excavator, move the bucket control lever to fully crowd the bucket, hold the lever in this position for a minimum of specified time 5s (engine at 1500 RPM (Revolutions Per Minute)).

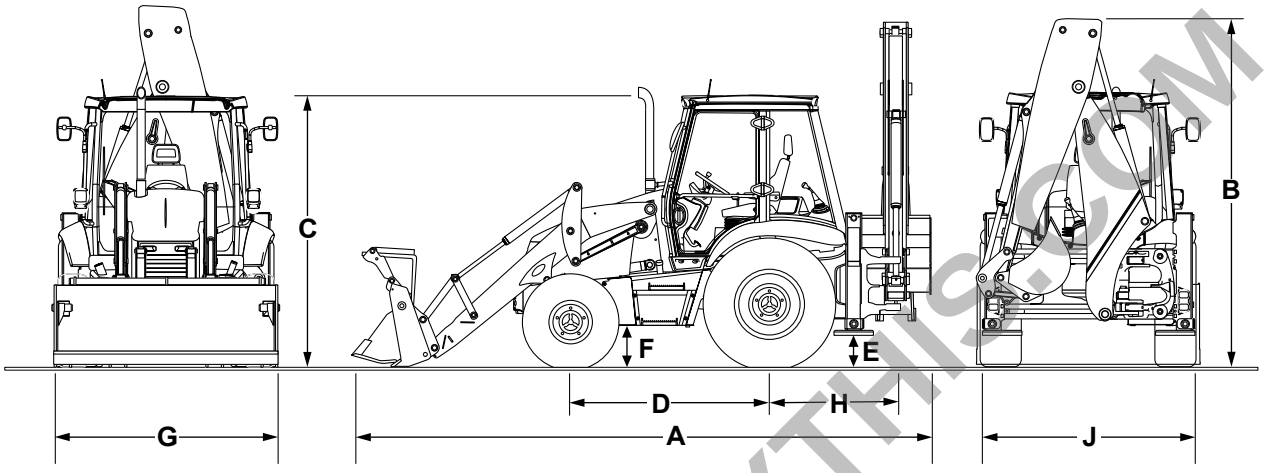
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Technical Data
Static Dimensions

Dimensions

Figure 163.



Machine weights/dimensions may vary dependent on options installed. Machine weight to ISO6016

Contact your JCB dealer for excavator and loader dimensions.

Table 18.

		Standard
A	Overall length	5.8m
B	Overall height	3.54m
B	Overall height (Extradig)	3.62m
C	Height to top of cab/canopy	2.81m
D	Wheelbase	2.17m
E	Ground clearance - front axle	0.34m
F	Ground clearance - mainframe	0.33m
G	Overall width with shovel	2.45m
H	Slew centre to rear axle	1.36m
J	Front wheel track	2.21m
J	Rear wheel track	2.17m

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Fluids, Lubricants and Capacities

General

⚠ **CAUTION** Waxoyl contains turpentine substitute which is flammable. Keep flames away when applying Waxoyl. Waxoyl can take a few weeks to dry completely. Keep flames away during the drying period.

Do not weld near the affected area during the drying period. Take the same precautions as for oil to keep Waxoyl off your skin. Do not breathe the fumes. Apply in a well-ventilated area.

JCB recommend that you use the JCB lubricants shown as they have been verified by JCB for use on JCB machines. However, you could use other lubricants that are equivalent to the JCB standards and quality or offer the same machine component protection.

No warranty liability will be accepted for engine failures where unacceptable fuel grades (or their equivalent) have been used at any stage.

Table 34.

Item	Capacity	Fluid/Lubricant	JCB Part Number	Container Size[1]	Specification
Fuel tank	127L	Diesel oil	-	-	
Engine (oil)[2]	Minimum 12L Maximum 15L	JCB engine oil EP 5W/40 -30°C (-22.0°F) to 46°C (114.7°F)	4001/2705	20L	API CH-4/CG-4, CF-4,CF,SJ.ACEA, E2, B3, A3
		JCB engine oil EP 15W/40 -15°C (5.0°F) to 46°C (114.7°F)	4001/1805		API CH-4/SJ, ACEA E5, E3, B3, A3
Engine (coolant)[3]	20.5L Wet 21.5L Dry	JCB antifreeze HP coolant/ water	4006/1120	20L	ASTM D3306, ASTM D4985, ASTM D6210, SAE (Society of Automotive Engineers) J1034, BS6580 (1992), AFNOR NF R15-601
Syncro shuttle (2WD (Two Wheel Drive))[4]	14.4L Dry 10L Wet	JCB extreme performance EP 10W -32°C (-25.6°F) to 40°C (103.9°F)	4000/2505	20L	
		JCB extreme performance EP SAE30 -5°C (23.0°F) to 46°C (114.7°F)	4000/2605	20L	
Syncro shuttle (4WD (Four Wheel Drive))[3]	15.4L Dry 11L Wet	JCB extreme performance EP 10W -32°C (-25.6°F) to 40°C (103.9°F)	4000/2505	20L	
		SAE30 -5°C (23.0°F) to 46°C (114.7°F)	4000/2605	20L	
Front axle (4WD)		JCB gear oil HP90 (without LSD (Limited Slip Differential))	4000/0305	20L	
Housing 2WS (Two Wheel Steer)	13L	JCB gear oil HP plus (with LSD)	4000/2205	20L	
Hubs (x2)	2L	JCB gear oil HP90	4000/0305	20L	
Rear axle (2WS)	21L	JCB gear oil HP90 (without LSD)	4000/0305	20L	
		JCB gear oil HP plus (with LSD)	4000/2205	20L	
Housing[6]	16.5L	JCB gear oil LS plus (with LSD)	4000/3905	20L	
Hubs (x2)	1.9L	JCB gear oil HP90	4000/0305	20L	
Brake system	1L	JCB Hydraulic Fluid HP15	4002/0503	1L	

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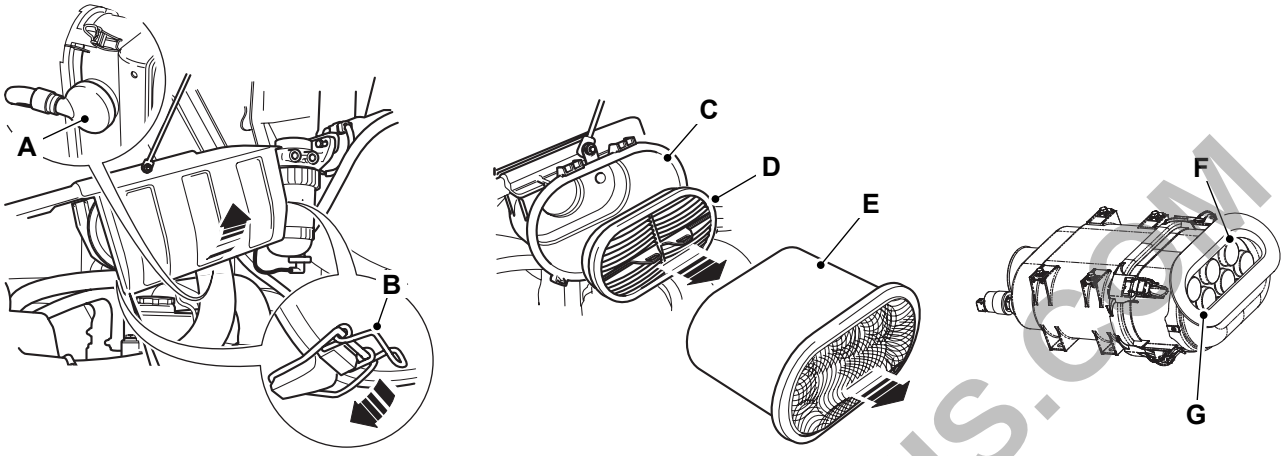
Pre-start Cold Checks, Service Points and Fluid Levels

Table 16.

Component	Task	10	50	100[1]	500	1000	1500	2000
Attachments								
6-in-1 Clam shovel	Lubricate	O	O	□	□	□	□	□
Excavator and loader arm quick hitch	Lubricate	O	O	□	□	□	□	□
Body and Framework								
General	Clean	O	O	□	□	□	□	□
General	Check (condition)	O	O	□	□	□	□	□
All pins and bushes	Check (condition)/Lubricate	O	O	□	□	□	□	□
Visual inspection of structure for damage including welds around ing points and excavator end main pivots	Check (condition)	O	O	□	□	□	□	□
Doors and hinges	Lubricate				□	□	□	□
All cables	Lubricate				□	□	□	□
Cab heater fresh air filter[2]	Replace				□	□	□	□
Cab air conditioning recirculation filter (if installed)[2]	Replace				□	□	□	□
Extending dipper	Lubricate		O	□	□	□	□	□
Kingpost clamp	Check (condition)			□	□	□	□	□
Door	Check (condition/operation)			□	□	□	□	□
Front mudguards - security (if installed)	Check (condition)			□	□	□	□	□
Boom lock engagement[16]	Check (condition)	O	O	□	□	□	□	□
Condition of paintwork	Check (condition)			□	□	□	□	□
Stabiliser legs (sideshift)	Check (condition)		O	□	□	□	□	□
Operator Station								
Seat, seat belt	Check (condition)			□	□	□	□	□
Operator protective structure and ROPS (Roll-Over Protective Structure)/FOPS (Falling Object Protective Structure)	Check (condition)	O	O	□	□	□	□	□
Engine								
Oil	Check (leaks)	O	O	□	□	□	□	□
Oil	Check (level)	O	O	□	□	□	□	□
Oil and oil filter[4, 5]	Replace				□	□	□	□
FEAD (Front End Accessory Drive) belt	Check (condition)				□	□	□	□
FEAD belt[14]	Replace							
Engine mounting bolts	Check (condition)			□	□	□	□	□
Hoses	Check (condition)			□	□	□	□	□

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Figure 144.



A Scavenge pipe (or dust valve if fitted)
B Clips
C Housing
D Outer element
E Inner element
F Air holes
G Cover

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	Low fuel	As the pointer reaches red zone the amber MIL with illuminate. The digital display will show a text message when the fuel level is less than 20L (4.3 gallons) for 2.5s. LOW FUEL will be displayed when the fuel gauge enters the red area and the buzzer will sound for 1s.
	No fuel	Amber MIL displays NO FUEL. When the fuel goes to less than 10L (2.15 gallons) for 2.5s. The buzzer will sound for 1s. when the fuel level goes up to more than 10L (2.15 gallons).
E	Cab clock	The clock must be on, press the increase or the decrease button to adjust the time. For rapid adjustment, press and hold either button for 5s. Refer to Figure 42.
E+	Increase button	
E-	Decrease button	
F	Warning lights	Refer to Warning Lights.

Warning Lights

Figure 43.

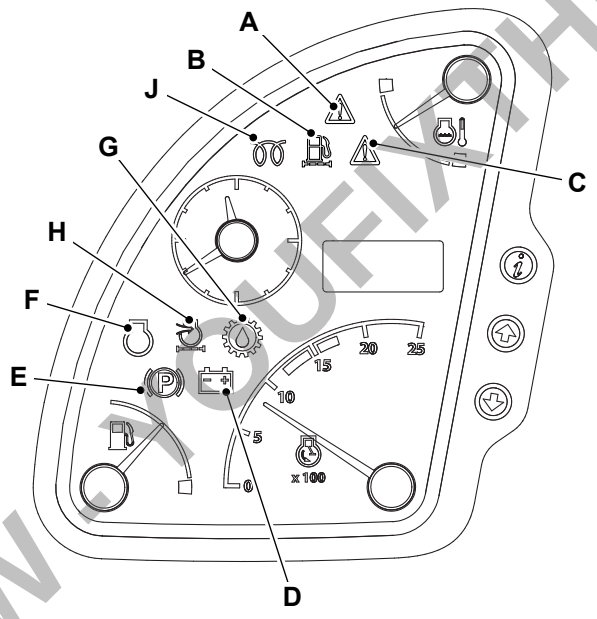


Table 10.

A	Red Malfunction Indicator Lamp (MIL) (critical fault). The digital display LCD (Liquid Crystal Display) will show STOP NOW and a continuous buzzer will sound. Stop the machine immediately, rectify the fault or contact your JCB distributor for advice.
B	Water in Fuel Sensor detected- LCD message WATER IN FUEL displayed. Warning light on continuously. Amber MIL and 1s buzzer. Fault code raised. Drain water from water separator bowl.
C	Amber Malfunction Indicator Lamp MIL Service fault. The LCD flashes SERVICE, a buzzer tone for 1s when a fault occurs. Certain operator faults will display an instruction. If lights D, E, F, G, H come on while the engine is running, stop the engine as soon as it is safe to do so. Do not use the machine until the fault is put right. These lamps will flash to indicate less critical faults are present.

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