SAFETY NOTICES

⚠ WARNING

Study This Manual Before Starting The Machine

You must understand and follow the instructions in this manual. You must observe all relevant laws and regulations. If you are unsure about anything, ask your JCB distributor or employer. Do not guess, you or others could be killed or seriously injured.

INT-1-1-1

⚠ CAUTION

Do not fit an attachment to this machine which is not JCB approved. Consult your JCB distributor before fitting any non approved attachment.

8-4-1-6

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.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.

INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

INT-1-2-3

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SAFETY CHECK LIST

Remember that the best operators are the safest operators. Most accidents can be avoided by observing basic safety precautions and staying alert when operating the machine. To help prevent accidents read the following safety checklist. As well as the precautions in this chapter, specific warnings are given throughout the book.

General Safety

⚠ WARNING
Manual
You and others can be injured if you operate or maintain the machine without first studying the Operator Manual. Read the safety instructions before operating the machine. If you do not understand anything, ask your employer or JCB distributor to explain it. Keep the Operator Manual clean and in good condition. Do not operate the machine without an Operator Manual in the cab, or if there is anything on the machine you do not understand.
INT-1-3-2_2

⚠ WARNING
Clothing
You can be injured if you do not wear the proper clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are: a hard hat, safety shoes, safety glasses, a well fitting overall, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained.
INT-1-3-6

⚠ WARNING
Raised Attachments
Raised attachments can fall and injure you. Do not walk or work under raised attachments unless they are safely blocked.
INT-1-3-8

⚠ CAUTION
Machine Modifications
This machine is manufactured in compliance with legislative and other requirements. It should not be altered in any way which could affect or invalidate any of these requirements. For advice consult your JCB Distributor.
INT-1-3-10_2

⚠ WARNING
Alcohol and Drugs
It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or while operating the machine or attachments. Be aware of medicines which can cause drowsiness.
INT-1-3-9_2

Operating Safety

⚠ WARNING
Machine Condition
A defective machine can injure you or others. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this manual are completed before using the machine.
INT-2-1-2_2

⚠ WARNING
Controls
You or others can be killed or seriously injured if you operate the control levers from outside the cab. Operate the control levers only when you are correctly seated inside the cab.
INT-2-1-3

⚠ WARNING
Visibility
Accidents can be caused by working in poor visibility. Keep windows clean and use your lights to improve visibility.

Do not operate the machine if you cannot see properly.
INT-2-1-11

⚠ WARNING
Roll Over
Should the machine start to roll over, you can be crushed if you try to leave the cab. If the machine starts to roll over, do not try and jump from the cab. Stay in the cab, with your seat belt fastened.
INT-2-1-12

⚠ WARNING
Machine Limits
Operating the machine beyond its design limits can damage the machine, it can also be dangerous. Do not operate the machine outside its limits. Do not try to upgrade the machine performance with unapproved modifications.
INT-2-1-4

⚠ WARNING
Passengers
Passengers in or on the machine can cause accidents. Do not carry passengers.
INT-2-2-2_1

⚠ DANGER
Sparks
Explosions and fire can be caused by sparks from the exhaust or the electrical system. Do not use the machine in closed areas where there is flammable material, vapor or dust.
INT-2-2-10

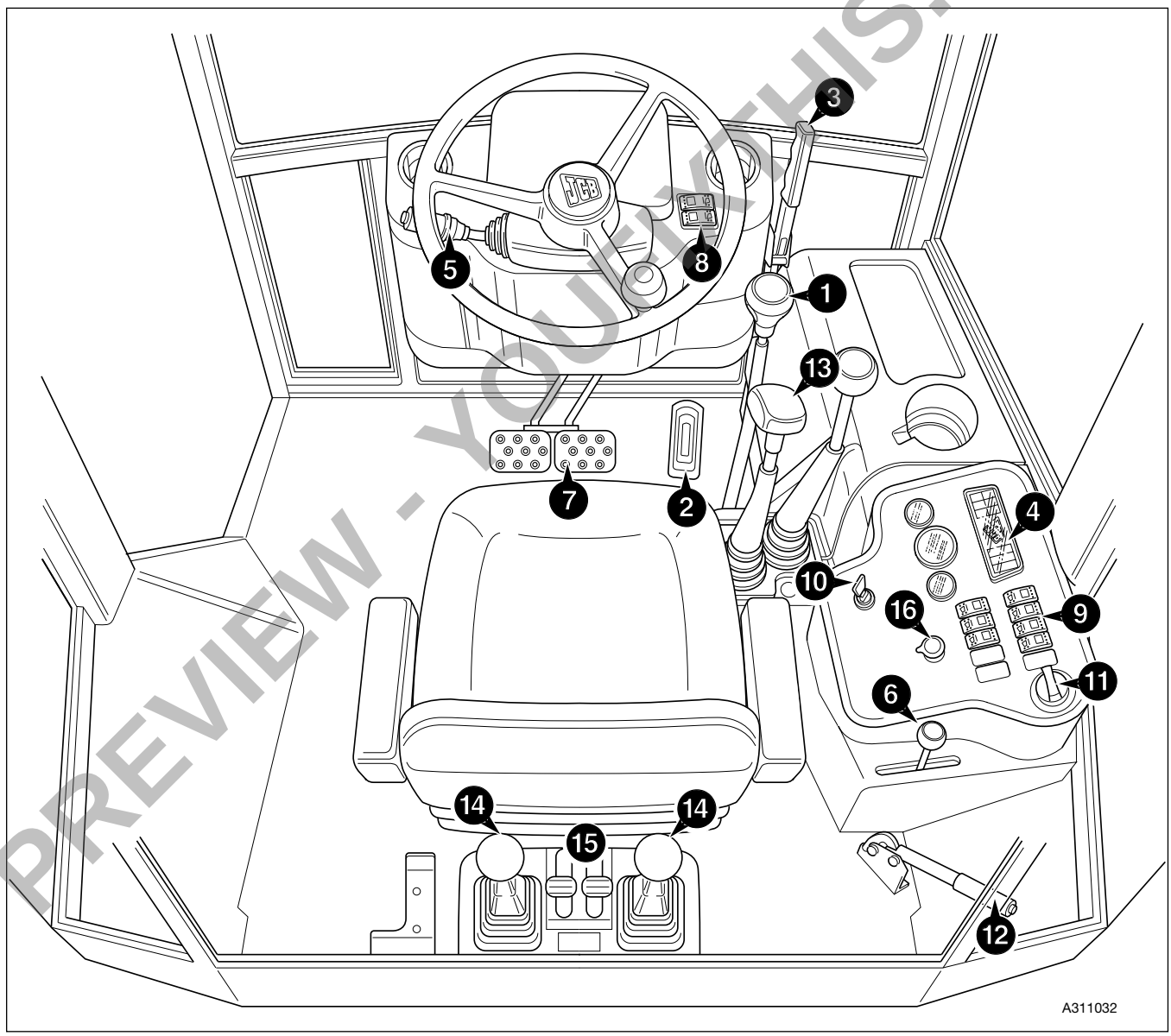
⚠ CAUTION
Regulations
Obey all laws, work site and local regulations which affect you and your machine.
INT-1-3-3

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ENGINE AND DRIVE CONTROLS, SWITCHES AND INSTRUMENTS

1 Gearshift lever.
2 Accelerator pedal.
3 Parking brake lever.
4 Instrument panel.
5 Forward/reverse lever & horn.
6 Hand throttle lever.
7 Brake pedals & locking bar.
8 Front console switches.
9 Side console switches.
10 Starter switch.
11 Heater.
12 Remote boom lock, *see* ***Boom and Swing Locks***.
13 Loader Controls, *see* ***Loader Controls***.
14 Backhoe Controls, *see* ***Backhoe Controls***.
15 Stabiliser Controls, *see* ***Stabilizer Controls***.
16 12 Volt Power Outlet.



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STARTING THE ENGINE

1 Read and comply with ***Before Starting the Engine*** on the previous page.

2 Put the Forward/Reverse Lever in Neutral
The engine will not start unless the forward/reverse lever **A** is in neutral.

3 Put the Gearshift Lever in Neutral
Make sure the gear lever **B** is in the neutral position.

4 Set the Hand Throttle Lever to Minimum
Make sure that hand throttle lever **C** is set at the minimum engine revs position.

5 Start the Engine

⚠ WARNING

Breathing the machine exhaust gases can harm and possibly kill you. Do not operate the machine in closed spaces without making sure there is good ventilation. If possible, fit an exhaust extension. If you begin to feel drowsy, stop the machine at once. Get out of the cab into fresh air.
INT-2-1-10

Notice: If the outside temperature is low, 32 °F (0 °C) or below, turn the starter switch key to the 'heat' position for 15-20 seconds to warm the engine induction manifold.

- **a** Slightly depress the accelerator pedal **D**.
- **b** Turn the starter switch **E** to the 'start' position and hold it there until the engine starts.

Notice: If the engine has not started after 20 seconds, release the starter switch. Wait two minutes before attempting another start. This will allow the starter motor to cool down.

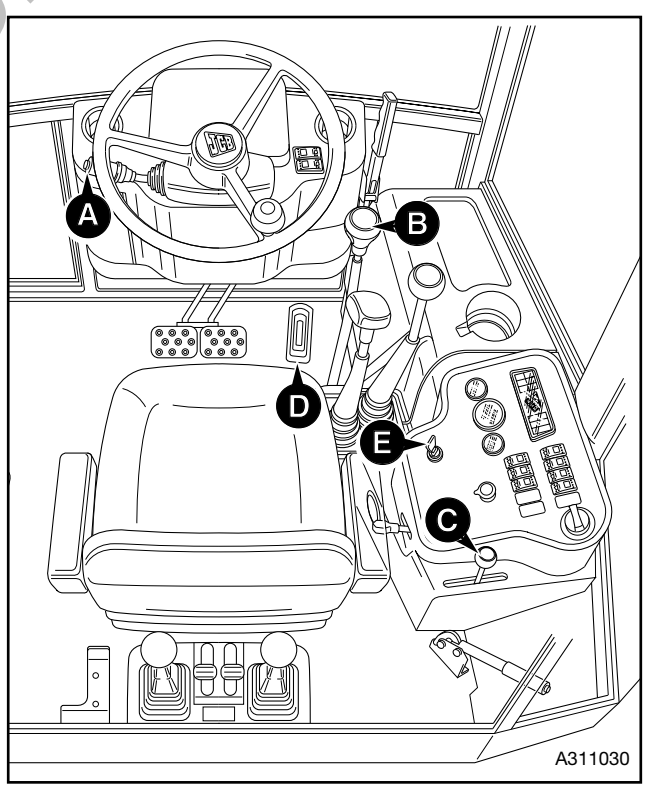
- **c** Release the starter key as soon as the engine starts. The switch will return to the 'IGN' position.
- **d** Ease off on the accelerator pedal to reduce engine speed.

6 Check the Warning Lights
Once the engine has started, check that all the warning lights have gone off. Do not race the engine until the **oil pressure low** light has gone out. Check that the audible alarm is silent.

Notice: If any warning lights fail to go off, or come on while the engine is running, stop the engine as soon as it is safe to do so.

7 Warm Up the Hydraulics.
Operate the backhoe a few times to help warm up the hydraulic system.

Notice: 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).



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SERVICE SCHEDULES

A badly maintained machine is a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the service schedules are done to keep the machine in a safe and efficient working condition.

⚠ WARNING

Maintenance must be done by suitably qualified personnel. Before attempting any maintenance work, make sure the machine is safe. Park on level ground. If it is necessary to work with the loader arms raised, then the loader arm safety strut must be fitted as shown in *Loader Arm Safety Strut in MAINTENANCE section*.

2-3-1-1

Apart from the daily jobs, the schedules are based on machine running hours. Keep a regular check on the hourmeter readings to correctly gage service intervals. Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are rectified immediately.

Calendar equivalents:

10 Hours	=	Daily
50 Hours	=	Weekly
500 Hours	=	Six Months
1000 Hours	=	Yearly
2000 Hours	=	2 Years

Pre-start Cold Checks **Service Points and Fluid Levels**	**Operation**	**10 Hr**	**50 Hr**	**†100 Hr**	**500 Hr**	**1000 Hr**	**2000 Hr**
TRANSMISSION, AXLES AND STEERING							
Transmission Oil Level	- Check	•	•	•	•		
Transmission Oil ⑧	- Change					•	•
Transmission Filter	- Change			•	•	•	•
Axle Oil Level (incl. Hubs when applicable) ①	- Check			•	•		
Axle Oil (incl. Hubs when applicable) ⑨	- Change					•	•
Axle Oil - Limited Slip Differential	- Change				•	•	•
Tire Pressures/Condition	- Check	•	•	•	•	•	•
Front Hub Bearings ③	- Check			•	•	•	•
Transmission Strainer	- Clean					•	•
Drive Shafts	- Security/Grease			•	•	•	•
Power Trackrod (if applicable)	- Check Torque			•		•	•
Tracking	- Check			•			
Steer Axle Movement/Shimming ③	- Check			•	•	•	•
Steer Axle Pivots and Linkages ⑦	- Grease			•	•	•	•
Front Axle Main Pivot	- Grease	•	•	•	•	•	•
HYDRAULICS							
Oil Level ②	- Check	•	•	•	•	•	
Oil ③	- Sample/Change						•
Hydraulic Oil Filter	- Change			•	•	•	•
Hydraulic Cylinders - Chrome Condition	- Check			•	•	•	•
Hydraulic Oil Cooler	- Clean				•	•	•
Hydraulic Oil Strainer	- Clean						•
Hydraulic Tank Filler Cap (with integral filter)	- Change						•
Hydraulic Pump Drive Shaft	- Examine/Grease			•	•	•	•
BRAKES							
Brake System Fluid Level	- Check	•	•	•	•	•	•
Brake System Fluid ③	- Change						•
Parking Brake	- Check and Adjust			•	•	•	•
ELECTRICS							
Battery Electrolyte Level (if applicable)	- Check			•	•	•	•
Wiring for Chaffing/Routing	- Check		•	•	•	•	•
Battery Terminals for Condition and Tightness	- Check			•	•	•	•

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SERVICE CAPACITIES AND LUBRICANTS

ITEM	CAPACITY US Gal	CAPACITY Liters	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Fuel Tank	34.3	130	Diesel Oil	ASTM D975-66T Nos. 1D, 2D
Engine (Oil) ①				
2 Wheel Steer Machines	2.6	9.7	**SAE 15W/40** -10°C to + 50°C (14°F to 122°F)	API CE Classification
Engine (Coolant)	6.07	23	**Anti-freeze/Water**	ASTM D3306-74
Syncro Shuttle (2WD) ②	3.8	14.4	**JCB Extreme Performance Transmission Oil**	
Syncro Shuttle (4WD) ②	4.0	15.4	-32°C to 40°C (-25°F to 104°F)	10W, EL4117
			-5°C to 46°C (23°F to 115°F)	SAE30, EL4118 CAT T04, ZFTE-ML3C
Front Axle				
Housing (2WS)	3.4	13	**JCB GL-5 80W/90**	API-GL-5
Hubs (x2)	0.5	2.0		
Rear Axle	6.1	23	**JCB Special Gear Oil Plus**	API-GL-4
Brake System				
- Standard	0.32	1.2	**Light Hydraulic Fluid**	ISO VG15
- Servo	0.37	1.4	⚠ **CAUTION: DO NOT USE ORDINARY BRAKE FLUID**	
Hydraulic System ③	34.3	130	**JCB Hydraulic Fluid**	ISO VG46
Grease Points	---		**JCB Moly EP # 2 Grease**	Lithium based, No. 2
Extending Dipper	---		**Waxoyl** ④	
Electrical connections	---		As a corrosion and moisture inhibitor all exposed connections should be coated liberally with petroleum jelly.	

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TIRES AND WHEELS

Tire Inflation

These instructions are for adding air to a tire which is already inflated. If the tire has lost all its air pressure, call in a qualified tire mechanic. The tire mechanic should use a tire inflation cage and the correct equipment to do the job.

⚠ WARNING

An exploding tire can kill, inflated tires can explode if overheated. Do not cut or weld the rims. Use a tire/wheel specialist for all repair work.
2-3-2-7

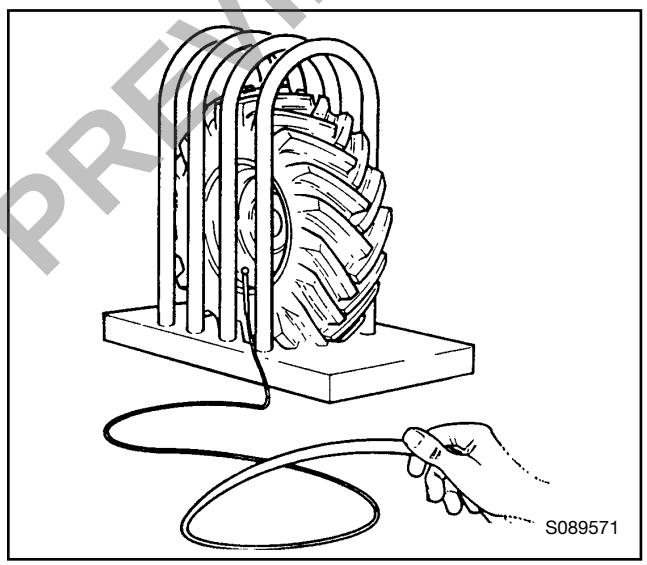
1 Prepare the Wheel
Before you add air to the tire, make sure it is correctly fitted on the machine or installed in a tire inflation cage.

2 Prepare the Equipment
Use only an air supply system which includes a pressure regulator. Set the regulator no higher than 1.38 bar (20 psi) above the recommended tire pressure. See ***Tire Sizes and Pressures*** *(SPECIFICATION Section)* for recommended tires and pressures for your machine.

Use an air hose fitted with a self-locking air chuck and remote shut-off valve.

3 Add the Air
Make sure that the air hose is correctly connected to the tire valve. Clear other people from the area. Stand behind the tread of the tire while adding the air.

Inflate the tire to the recommended pressure. Do not over-inflate.



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Checking the Wheel Nut Torques

On new machines, and whenever a wheel has been removed, check the wheel nut torques every two hours until they stay correct.

Every day, before starting work, check that the wheel nuts are tight.

The correct torques are shown in the table below.

	lbf ft	Nm
Front -	500	680
Rear -	500	680

⚠ WARNING

If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged.
2-3-2-8

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ENGINE AIR FILTER

Changing the Elements

⚠ CAUTION

The outer element must be renewed immediately if the warning light on the instrument panel illuminates.
2-3-3-1

Notice: Do not attempt to wash or clean the elements - they must only be renewed.

Notice: Do not run the engine with the dust valve **J** removed.

Notice: A new inner element must be fitted at least every third time the outer element is changed. As a reminder, mark the inner element with a felt tipped pen each time the outer element is changed.

1 Stop the engine.

2 Remove the engine side panel (left hand side), *see **Engine Panels** in MAINTENANCE section.*

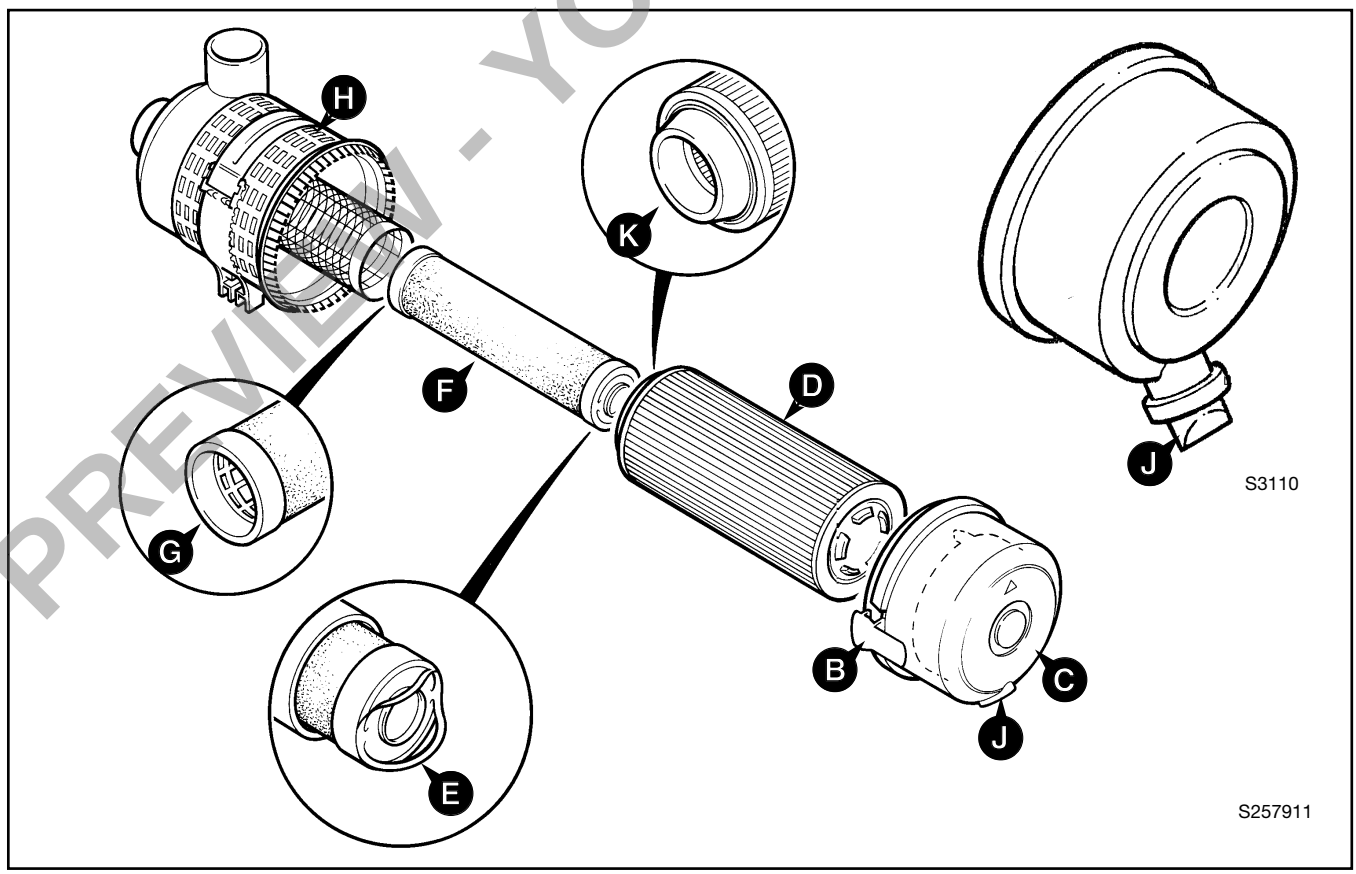
3 Cover the end of the inlet hose to prevent rain and dirt from getting into the engine.

4 Depress clips **B** and lift off cover **C**. Remove outer element **D**. Take care not to tap or knock the element. If the inner element is to be changed, lift up pulls **E** and remove inner element **F**.

5 Clean inside the canister **H**, cover **C** and dust valve **J**.

6 Insert the new elements into the canister, pushing them firmly in so that seals **G** and **K** are fully seated. Fit cover **C** with dust valve **J** at the bottom. Push the cover firmly into position and make sure it is secured by clips **B**.

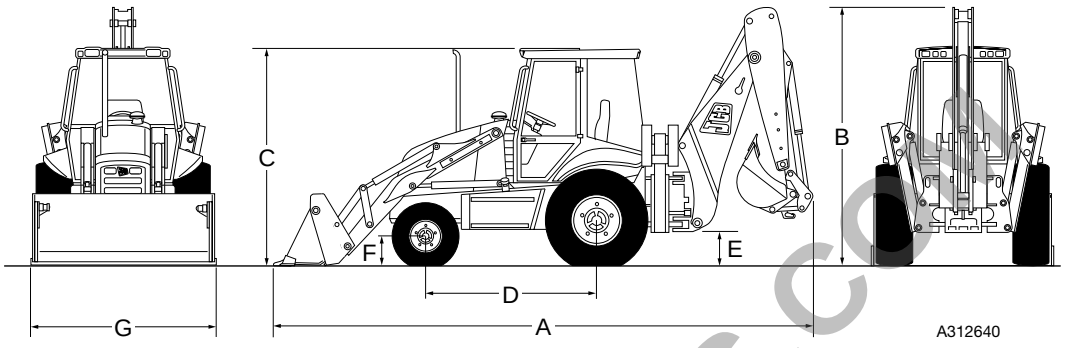
7 Make sure that the wire is connected to the **Air Filter Blocked** switch.



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STATIC DIMENSIONS

214e (3C Plus)



Item	Description	Dimensions
A	Overall length	23ft 0in (7.01m)
B	Overall height (extra-dig instaled)	11ft 2in (3.38m)
C	Height to top of cab	9ft 1in (2.77m)
D	Wheelbase	
	2 Wheel Drive	6ft 11in (2.10m)
	4 Wheel Drive	7ft 2in (2.165m)
E	Ground clearance - mainframe	1ft 2in (0.38m)
F	Ground clearance - front axle	1ft 0in (0.30m)
G	Width	7ft 0in (2.13m)
Weight	2 Wheel Drive, ROPS, standard bucket	13046lb (5918kg)
	4 Wheel Drive, ROPS, standard bucket	13376lb (6067kg)
	4 Wheel drive, Cab, Extradig	15268lb (6925kg)

Notice: Dimensions based on standard tires instaled (rear: 17.5 x 24 x 10; front: 12 x 16.5 x 10).

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INTRODUCTION

⚠ WARNING

Use only the JCB approved attachments that are specified for your machine. Operating with non-specified attachments can overload the machine, causing possible damage and machine instability which could result in injury to yourself or others.

2-4-5-2

A wide range of optional attachments is available to increase the versatility of your machine. Only JCB approved attachments are recommended for use with your machine. Consult your JCB Distributor for the full list of approved attachments available.

JCB attachments are designed and manufactured specifically to suit the machine's hydraulic system, mounting arrangements and safe load requirements. Attachments which are not designed for use with this machine may cause damage and create safety hazards for which JCB cannot be held responsible. In addition the machine's warranty and any other legislative compliance may be affected by the use of non JCB approved attachments.

2-4-1-14/2

⚠ CAUTION

If you have an optional attachment which is not covered in this manual, do not fit it or use it until you have obtained, read and understood the attachment operating information.

2-4-1-1

This part of the manual includes general information on backhoe attachment operation and instructions for instalation and removal of attachments.

Some attachments are supplied complete with instructions on safety, instaling and removing, operation and maintenance. Read and fully understand the information before fitting, using and servicing the attachment. If there is anything you do not understand, ask your JCB Distributor.

Practice using attachments off the job before working with them for the first time.

If your machine needs the hydraulic system adapted to facilitate the use of auxiliary attachments, you **must** consult your distributor. Only suitably qualified personnel must re-route hydraulic hoses.

All optional attachments will have limits on their operation. i.e. lifting capacity, speeds, hydraulic flow rates, etc. Always check in the literature supplied with the attachment and/or in the *SPECIFICATION* section of this manual. Some specification limits may also be displayed on the attachments Data/Rating Plate.

⚠ CAUTION

Some attachments may contact parts of the machine when in the fully folded position. Take extra care to avoid damage to the machine.

3-4-1-4

Attachments for Your Machine

These attachments will help increase the productivity of your machine, for more information contact your JCB Distributor.

General Purpose Bucket
Grading Bucket
Jaw Bucket
Multi-purpose Bucket
Side Tip Bucket
Forks and Frame
Rockbreaker
Backhoe Quickhitch (mechanical)
Earth Drill and Augers

Remember, do not operate attachments until you have read and fully understand the attachment operating instructions.

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TRANSPORTING THE MACHINE

The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachments or parts that may move during transit must be adequately secured.
5-2-5-9

Notice : Before transporting the machine make sure you will be obeying the rules and laws of all the areas that the machine will be carried through.

Make sure that the transporting vehicle is suitable. See ***Static Dimensions*** *(SPECIFICATIONS section)* for the dimensions of your machine.

⚠ WARNING

Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tires. Make sure the machine will not foul on the ramp angle. See Static Dimensions (SPECIFICATION section) for the minimum ground clearance of you machine.
2-2-7-5/1

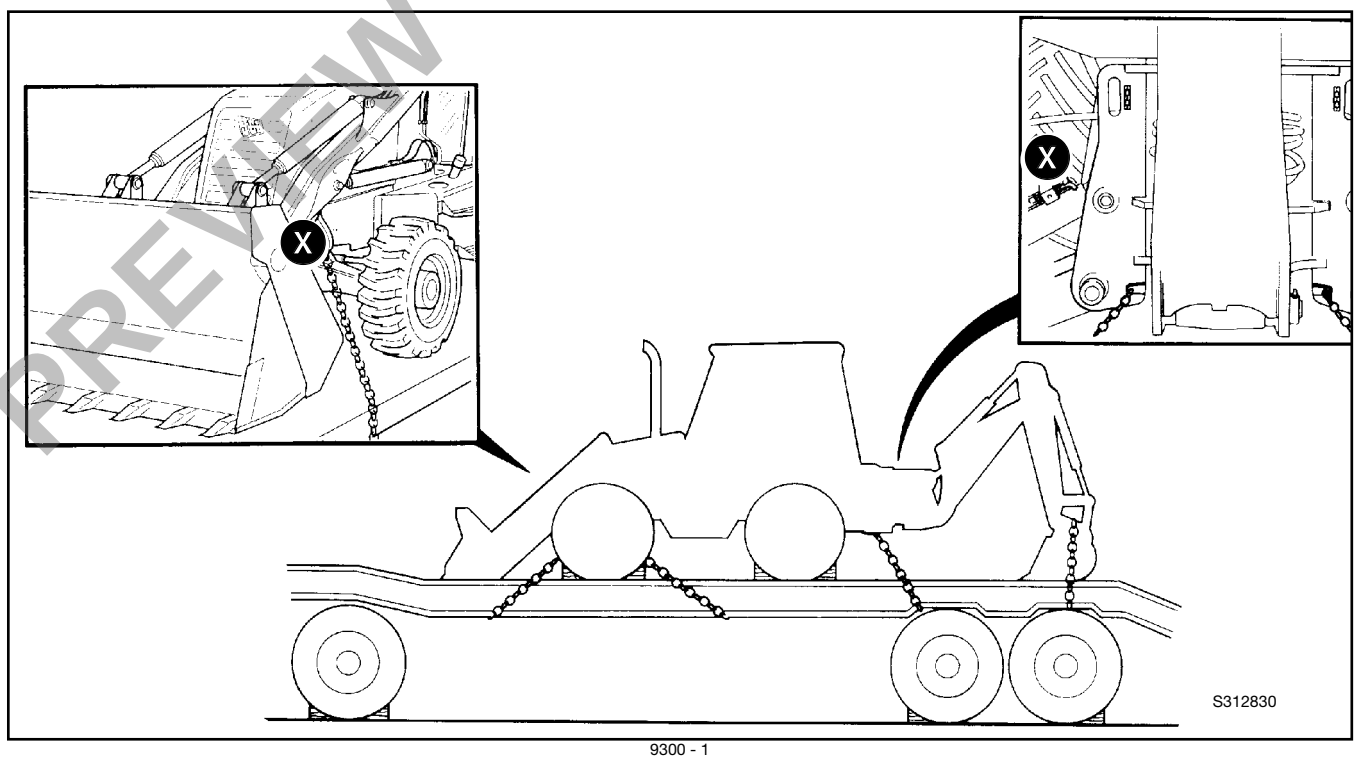
1 Block the Transporter Wheels
Place blocks at the front and rear of the trailer wheels.

2 Move the Machine Onto the Trailer
- **a** Make sure the ramps are correctly in place and secure.
- **b** Set the loader bucket and backhoe as in ***Preparing for Road Travel*** *(OPERATION) section.*
- **c** Carefully drive the machine onto the trailer.
- **d** Engage the parking brake and set the drive to neutral.
- **e** When the machine is safely in position, release the boom lock; lower the loader bucket and backhoe onto the trailer. Secure the stabilizers to prevent them moving during transportation.
- **f** Fit the swing lock (see Notice).
- **g** Check that the overall height of the load is within regulations. Adjust if necessary.
- **h** Switch off the engine.
- **i** Secure the cab.
- **j** Cover the exhaust stack.

Notice: If for any reason the swing lock can not be fitted, then the bucket must be securely lashed to the trailer bed, if no bucket is fitted, then secure the dipper end to the trailer bed.

3 Anchor the Machine
Put blocks at the front and rear of all four tires. Anchor the machine to the trailer with suitable chains. The anchor points **X** are shown on the illustration.

4 Measure the Machine Height
Measure the maximum height of the machine from the ground. Make sure the truck driver knows the clearance height before he drives away.



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