OPERATOR'S MANUAL



FASTRAC (AGRICULTURAL TRACTOR)

4160, 4190, 4220

EN - 9831/3950
ISSUE 1 - 02/2017

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE

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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 3. The safety alert system



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Introduction
About this Manual

Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

Model	From:	To:
4160	2185000	
4190	2185000	
4220	2185000	

Using the Manual

This operator's manual is arranged to give you a good understanding of the machine and its safe operation. It also contains maintenance and technical data.

Read this manual from the front to the back before you use the machine for the first time, even if you have used machines of a similar/same type before as the technical specification, systems and controls of the machine may have changed. Particular attention must be given to all the safety aspects of operating and maintaining the machine.

If there is anything you are not sure about, ask your JCB dealer or employer. Do not guess, you or others could be killed or seriously injured.

The general and specific warnings in this section are repeated throughout the manual. Read all the safety statements regularly, so you do not forget them. Remember that the best operators are the safest operators.

The illustrations in this manual are for guidance only. Where the machines are different, the text and or the illustration will specify.

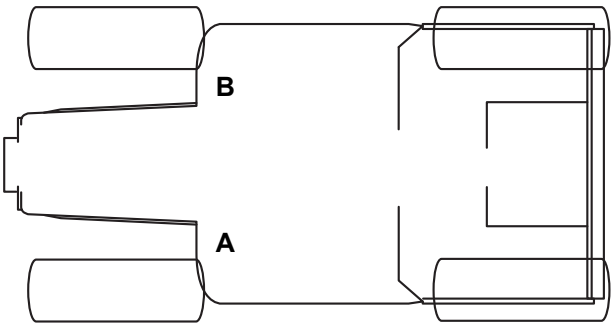
The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this manual.

All of the optional equipment included in this manual may not be available in all territories

Left-Hand Side, Right-Hand Side

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

Figure 1.



A Left **B** Right

Cross References

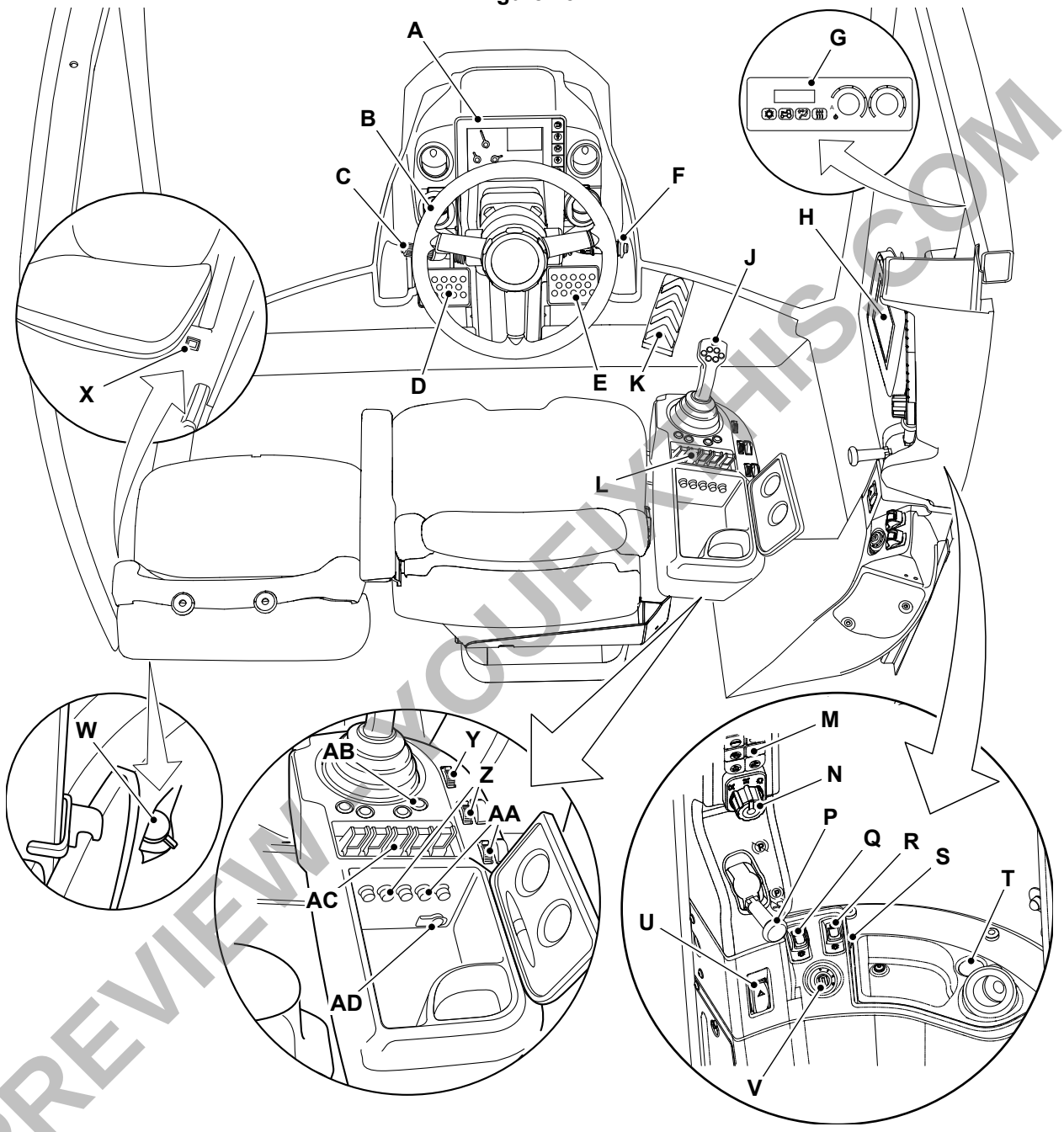
In this manual, cross references are made by presenting the subject title in blue (electronic copy only). The number of the page upon which the subject begins is indicated within the brackets. For example: Refer to: Cross References (Page 1).

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Operator Station

Component Locations

Figure 15.



A Instrument cluster
B Steering wheel
C Forward/reverse shuttle lever (option)
D Clutch pedal
E Brake pedal
F Column mounted multi-purpose switch
G Heater and air-conditioning controls
H Touch screen monitor
J Multi functional joystick
K Accelerator pedal
L Armrest mounted switches
M Switch panels
N Steer mode switch
P Park brake lever
Q Front PTO (Power Take-Off) (option)
R Rear PTO
S Radio auxiliary Input
T Power socket (12V)
U Hazard switch
V Ignition key
W Power socket (12V)
X Coolbox switch
Y Hand throttle
Z Front 3-point linkage controls
AA Rear 3-point linkage controls
AB Transmission control buttons

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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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Moving a Disabled Machine

General

⚠ **DANGER** If the engine is not running, there will not be enough pressure to apply the service brakes. Before you operate the machine carefully follow the precautions, or there may be a serious accident.

Only tow the machine in an emergency recovery situation at very slow speeds and ensure you adhere to the transmission towing procedure.

Remember that more damage might be caused to the machine by towing it. The tractor steering and brakes will be impaired if the engine is not running. The Park Brake will not release if the air pressure is low.

A disabled tractor is best transported on a flatbed carrier. Refer to: Transporting the Machine (Page 164).

It is not possible to tow-start or push-start the machine due to the design of the transmission.

Jump-Starting the Engine

⚠ **WARNING** In temperatures below freezing, the battery electrolyte may freeze if the battery is discharged or poorly charged. Do not use a battery if its electrolyte is frozen. To prevent the battery electrolyte from freezing, keep the battery at full charge.

If you try to charge a frozen battery or jump-start and run the engine, the battery could explode.

Batteries produce a flammable gas, which is explosive. Do not smoke when checking the electrolyte levels.

When jump-starting from another vehicle, make sure that the two vehicles do not touch each other. This prevents any chance of sparks near the battery.

Switch off all circuits which are not controlled by the ignition key.

Do not connect the booster (slave) supply directly across the starter motor.

Use only sound jump leads with securely attached connectors. Connect one jump lead at a time.

The machine has a negative earth electrical system. Check which battery terminal is positive (+) before making any connections. Keep metal watch straps and jewellery away from the jump lead connectors and the battery terminals - an accidental short could cause serious burns and damage equipment. Make sure you know the voltage of the machine. The booster (slave) supply must not be higher than that of the machine. Using a higher voltage supply will damage your machine's electrical system. If you do not know the voltage of your booster (slave) supply, then contact your JCB dealer for advice. Do not attempt to jump-start the engine until you are sure of the voltage of the booster (slave) supply. The negative (-) terminal on the battery is connected to frame earth.

WARNING Keep metal watch straps and any metal fasteners on your clothes, clear of the positive (+) battery terminal. Such items can short between the terminal and nearby metal work. If it happens you can get burned.

If the batteries have become discharged, then it is better practice to charge the batteries rather than to jump start the machine.

Use a booster supply of 12V (not 24V). In this procedure, the negative booster lead is connected to an earth point away from the battery.

1. Engage the park brake.
2. Set all switches in the cab to off.
3. Open the right hand pannier to gain access to the batteries.
   Refer to: Battery Cover (Page 206).
4. Switch the battery isolator on so the tractor is ready to start.
5. Connect the booster cables as follows:
   5.1. Connect the positive booster cable to the positive (+) terminal on the nearer battery of the machine.

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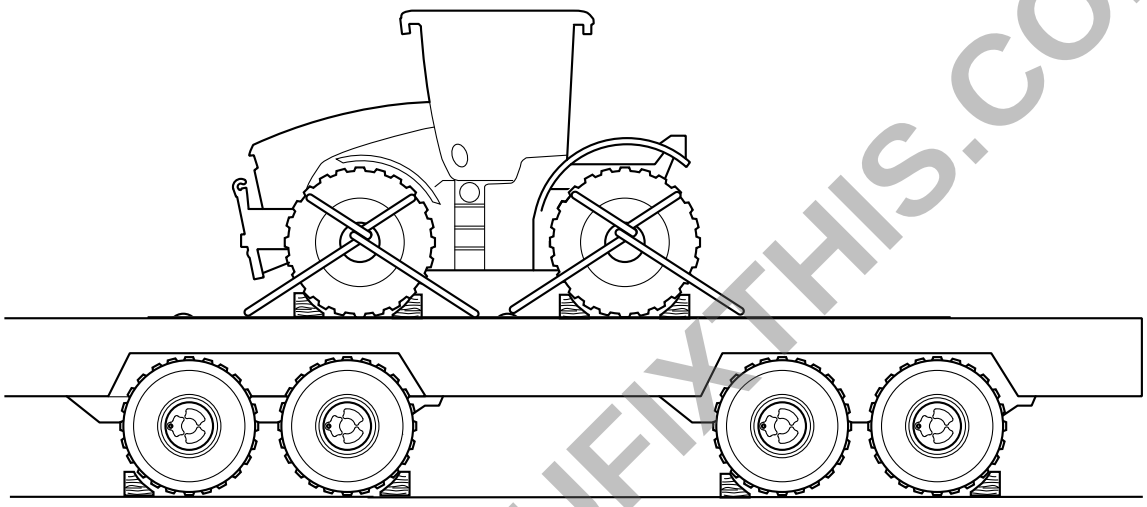
Transporting the Machine

General

⚠ **WARNING** 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.

CAUTION 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 tracks. Make sure the machine will not foul on the ramp angle.

Figure 155.



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.

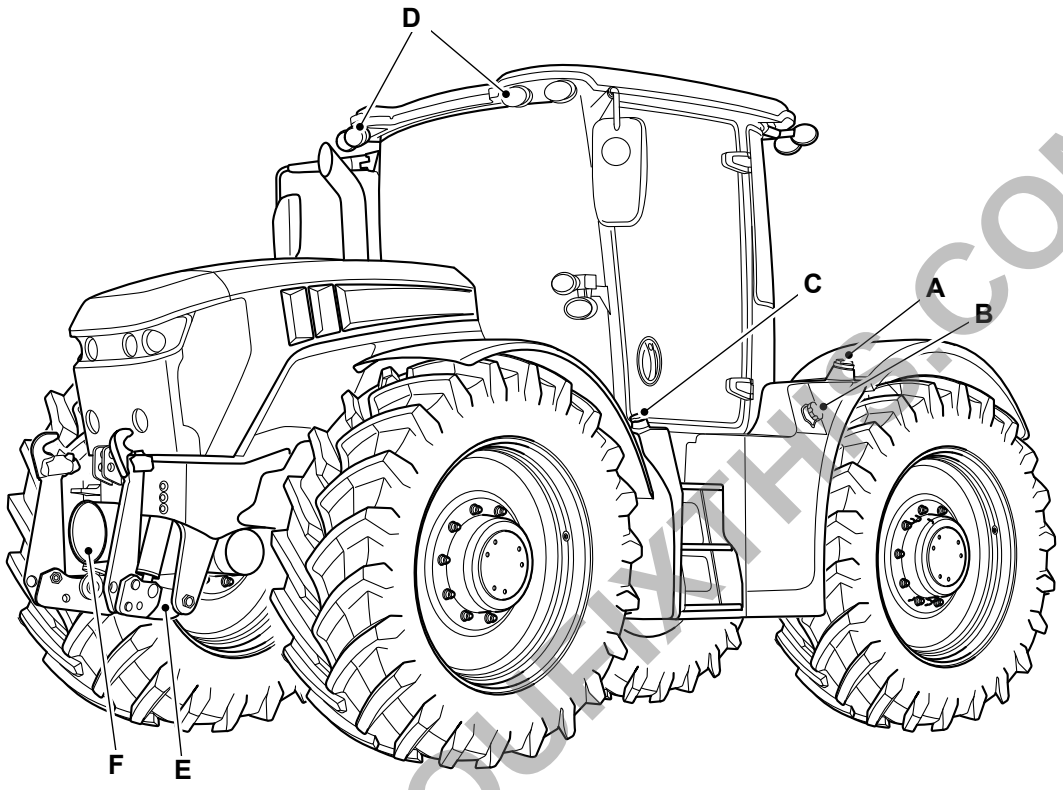
Make sure that the transporting vehicle is suitable. See the static dimensions for the dimensions of your machine. Refer to: Dimensions (Page 269).

1. Block the transporter wheels.
   1.1. Place blocks at the front and rear of the trailer wheels.
2. Move the machine on to the trailer.
   2.1. Make sure the ramps are correctly in place and secure.
   2.2. Carefully drive the machine onto the trailer.
   2.3. Engage the park brake.
   2.4. Switch off the engine.
   2.5. Place blocks at the front and rear of the wheels.
   2.6. Check the engine and battery compartment are closed and any attachments are secure.
3. Anchor the Machine.
   3.1. Anchor the machine to the trailer with suitable webbing straps, individually fixing all four wheels to the deck of the trailer. Refer to Figure 155.
   3.2. Avoid strapping any part of the machine where the straps may damage critical componentry. For example, strapping around either axle could damage the steel brake pipes running along their length.
4. Measure the Machine Height
   4.1. Measure the maximum height of the machine from the ground. Make sure that the truck driver knows the clearance height before the truck drives away.

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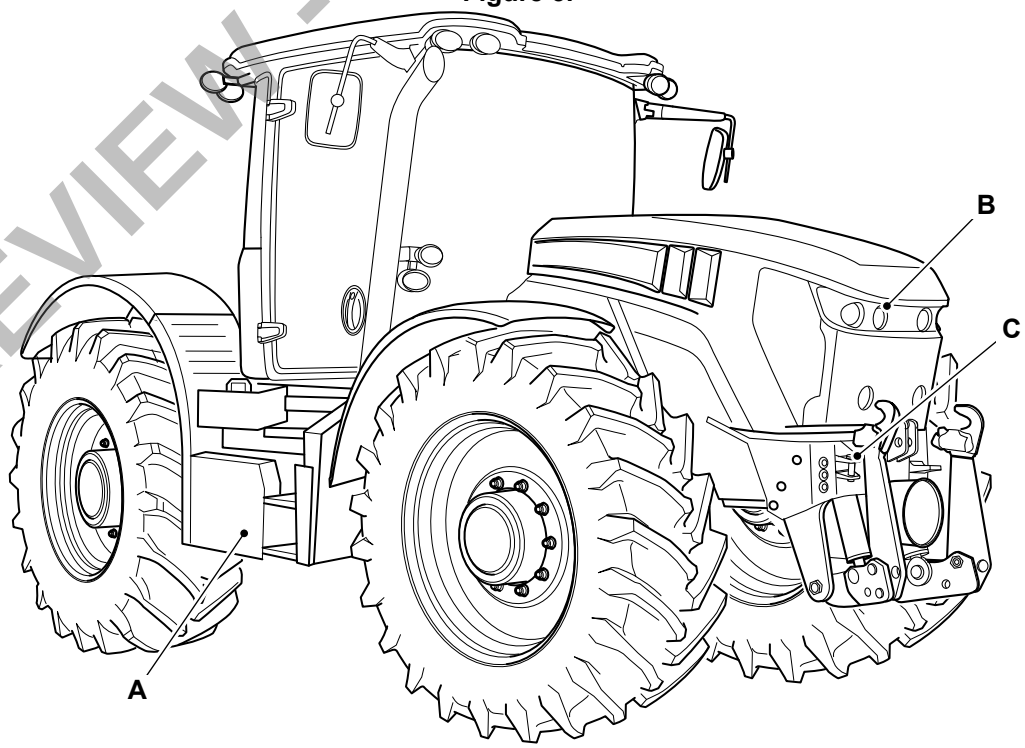
Main Component Locations

Figure 4.



A Fuel filler
B DEF (Diesel Exhaust Fluid)
C Hydraulic filler
D Front work lights
E Front 3-point linkage
F Front PTO (Power Take-Off)

Figure 5.



A Right hand pannier
B Headlights

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Table 5. Safety Labels

Item	Part No.	Description	Qty.
A	332/U9190	Burns to fingers and hands. Stay a safe distance away.	1
B	332/T2017	Warning. Read the Operator’s Manual before you operate the machine.	1
C	332/U8598	Crush hazard. Wear seat belt.	1
D	332/W5791	Crush hazard. Do not use the passenger seat where a risk of rollover exists. It is prohibited to use the passenger seat for in-field operations.	1
E	332/P7131	Pressure hazard. Read the Service Manual.	1
F	332/W8904	Burns to fingers and hands. Stay a safe distance away.	1
G	332/P4679	Severing of hands and fingers. Keep clear of/do not reach into rotating parts. Read the Service Manual.	1
H	332/W7769	Entanglement hazard. Keep clear of the PTO (Power Take-Off) shaft.	2
J	332/W5651	Radar warning. To avoid possible eye injury, do not look directly into the face of radar sensor while it is in operation.	1
K	332/P7129	Run over hazard. Start the engine from the operator's seat only. Do not short across the terminals.	1
L	332/U8597	Crushing hazard. Operate from a safe location.	1
M	332/W7435	Pressure hazard. Read the Operator’s Manual.	1

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Electrical System

General

Error Codes

In the event of the tractor developing a fault which affects vehicle safety or key performance, the fault icon will be shown on the dashboard. A warning buzzer may also sound. If the fault relates to engine emissions, icon will appear on the touchscreen. Refer to: General (Page 51).

The machine must be stopped and the fault rectified as soon as it is safe to do so. If the fault can not be rectified by the operator, then contact your nearest JCB dealer.

These corresponding fault codes are displayed on the touch screen. Press icon G on the Service Information. Refer to: General (Page 51).

Red codes: currently active

Black codes: previously active (since the last ignition On)

Explanation of these error codes are listed.

Further diagnostic information can be accessed by service personnel using the icon J and a unique PIN (Product Identification Number) code. Contact your dealer for further information.

Figure 247.

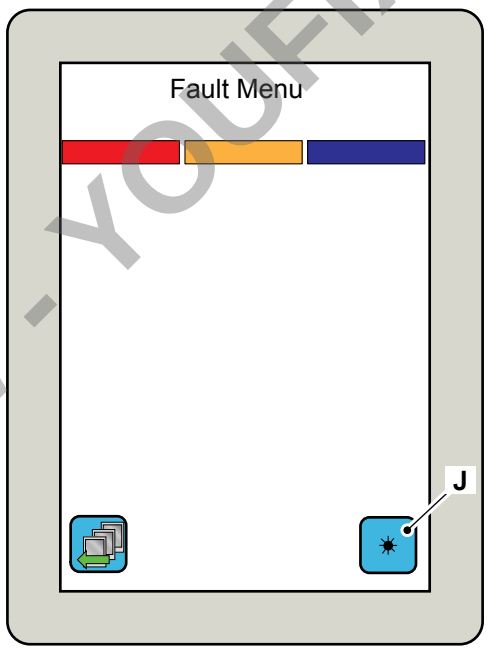


Table 87.

Prefix letter	Affected Part of Machine
A	ABS (Anti-lock Braking System)
C	Central Controller (mainly external hydraulics controls)
D	Instrument cluster
F	4WS (Four Wheel Steer) system
G	Gearbox
M	Work Lights
N	Electronic spool grey2 slice
P	Touch Screen

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Air flow direction is automatically controlled depending if it is heating or cooling.

Recirculation is switched off.

Manual Control

Operating any of the controls manually will over-ride that function of 'auto mode'.

To Defrost/Demist in Cold Weather

1. Select the demist mode.
2. Air-conditioning is automatically selected to assist dehumidifying the cab. For maximum performance, rotate temperature control to increase the temperature of the de-humidified conditioned air.

Heated screens (if installed) are controlled separately. Refer to: General (Page 20).

Make sure you do not cover the recirculation intake grille behind the seat and that both the recirculation filter and external cab air filter are kept clean.

If the air-conditioning has been used intensively, before you stop the tractor:

- Switch off the air-conditioning and rotate the temperate control to a warm setting. Keep the fan running for two minutes to dry the evaporator core.
- To maintain air-conditioning performance, run the air-conditioning for two minutes every month by rotating the temperature control to the lowest setting and switching air-conditioning on.

Fault Codes

Contact your JCB dealer if any of the following fault codes appear on the display screen. Refer to Figure 148.

Table 51.

Fault Codes	Cause
01	air-conditioning pressure fault
02	air-conditioning pressure fault
03	Blower control signal fault
04	Temperature control signal fault
07	Cab temperature sensor fault
08	Evaporator temperature sensor fault
09	Outlet temperature sensor fault
E19	Communication fault

Cab Filters

⚠ **WARNING** The cab air filter is designed to remove dirt from the outside air. When using chemicals (e.g. for crop spraying) follow the chemical manufacturer's recommendations for protection from dangerous chemicals.

If the machine has been used for crop spraying the filters may contain traces of spray. Wear appropriate personal protective equipment when handling contaminated filters and adhere to any applicable requirements regarding disposal.

The cab filtration is classified according to standard EN 15695-1/2009. Categories 1-4 are used for classification. The cab meets requirements for protection against hazardous substances penetrating inside the cab in accordance with category 2. This is shown on a label on the inside of the cab.

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Fluids, Lubricants and Capacities

General

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 80.

Item	Capacity	Fluid/Lubricant	JCB Part Number	Container Size[1]
Fuel Tank	390L	Diesel		
DEF (Diesel Exhaust Fluid) Tank	45L	DEF (Adblue)	4007/1009	10 Litres
			4007/1008	18 Litres
			4007/1003	200 Litres
Engine (Oil)	21L	JCB Ultra Performance Engine Oil -20°C (-4.0°F) to 40°C (103.9°F) API CJ-4, SAE15W/40 [2]	4001/2901	4 x 5 Litres
			4001/2905	20 Litres
			4001/2903	200 Litres
Engine (Coolant)	31L	JCB Antifreeze HP/Coolant + Water ASTM D3306, ASTM D4985, ASTM D6210, SAE J1034, BS6580 (1992), AFNOR NF R15-601	4006/1120	20 Litres
Transmission	35L	JCB Optimum Performance Transmission Fluid	4004/6305	20 Litres
Front Axle				
- Axle Beam	10L	JCB Gear Oil HP90	4000/0305	20 Litres
- Hubs (each)	2.5L	JCB Gear Oil OP 75W-140	4000/4801	4 x 5 Litres
Rear Axle				
- Axle Beam	11L	JCB Gear Oil HP90	4000/0305	20 Litres
- Hubs (each)	2.5L	JCB Gear Oil OP 75W-140	4000/4801	4 x 5 Litres
Brake System				
- Front	0.75L	JCB Brake Fluid Dot 4 (capacity given is for each reservoir)	4002/0404	1 Litres
- Rear (2 reservoirs)	0.75L			
Hydraulic System[3]	130L	JCB Hydraulic Fluid HP32 (all climates)	4002/1024	200 Litres
		JCB Hydraulic Fluid HP46 (above 0°C (32.0°F))	4002/0803	200 Litres
Grease Points		JCB HP Grease	4003/2017	24 x 0.4kg
Front PTO (Power Take-Off) Gearbox (optional)[4]	7L	JCB Universal Agricultural Oil	4004/0305	20 Litres
Air Conditioning System[5]	1.4kg	R134A Air Conditioning Gas		

(1) For information about the different container sizes that are available (and their part numbers), contact your JCB dealer.
(2) It is essential that 15W/40 oil meeting API CJ -4 or ACEA E7/E9 specifications is used. If operating in ambient temperatures below -25°C (-13.0°F) or above 40°C (103.9°F) refer to your JCB dealer.
(3) Before refilling, check if an implement has been left with rams extended causing the oil level to be low. Watch level indicator on hydraulic tank.
(4) Using the level plug recheck the oil level again after running the front PTO as oil will be circulated around the cooler circuit.
(5) When new, the system is filled with 135cc of PAG oil type SG-10. Machines are supplied with U-V dye included in the system.

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Maintenance Schedules

General

⚠ **WARNING** Maintenance must be done only by suitably qualified and competent persons.

Before doing any maintenance make sure the machine is safe, it must be correctly parked on solid, level ground.

To prevent anyone starting the engine, remove the ignition key. Disconnect the battery when you are not using electrical power. If you do not take these precautions you could be killed or injured.

WARNING Make the machine safe before getting beneath it. Make sure that any attachments on the machine are correctly attached. Engage the park brake, remove the ignition key, disconnect the battery.

The hours reminder is shown on the instrument panel and can be reset by the operator. Refer to: Instrument Panel (Page 85).

A poorly maintained machine is a danger to the operator and the people working around him. Adhere to the schedules to keep the machine in a safe and efficient working condition. Make sure any defects found are rectified immediately.

How to Use the Maintenance Schedules

The schedules show the service tasks which must be done and their intervals.

The services must be done at either the hourly interval or the calendar equivalent, whichever occurs first.

The intervals given in the schedules must not be exceeded. If the machine is operated under severe conditions (high temperature, dust, water, etc.) shorten the intervals.

Table 59.

○	Service task can be completed by a competent operator. Details of how to complete the service task are given in the Operator's Manual.
□	We recommend that a Service Engineer completes the service task. Details of how to complete the service task are given in the Service Manual.

Maintenance Intervals

General

Table 60.

Interval (h)	Calendar Equivalent
10	Daily
50	Weekly
500	6 months
1000	Yearly
2000	2 Years
5000	5 Years

Pre-start Cold Checks, Service Points and Fluid Levels

Table 61.

Component	Task	10	50	100[1]	500	1000	2000	4000
Engine								
Oil level	Check	○	○	□	□	□	□	□
Oil and filter	Replace				□	□	□	□
Air cleaner primary element[2]	Check			□	□	□	□	□

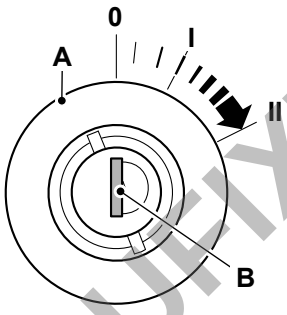
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Interior Switches

Ignition Switch

1. The ignition key operates the three-position ignition switch. The ignition key can only be inserted or removed in position 0.
2. Turn the ignition key to position I.
3. The engine heater will function automatically depending on the ambient temperature. Wait until the engine heater symbol light goes off on the dashboard. In warm temperatures it is not used.
4. Push and hold down the clutch pedal.
5. Turn the ignition key to position II to start the engine. Refer to Figure 16.
6. Release the ignition key once the engine is running. The key will return to position I.
7. Do not rev a cold engine. At start up the transmission defaults to drive mode so only the foot throttle is active.

Figure 16.



A Ignition switch **B** Ignition key

Table 6. Switch Positions

Position	Function
0	Off/Stop the engine: Turn the ignition key to this position to stop the engine.
I	On: Turn the ignition key to this position to connect the battery to all of the electrical circuits. The ignition key will return to this position when it is released from position II.
II	Start: Turn the ignition key to this position to operate the starter motor and turn the engine.

New engines do not require a gentle running-in period. The engine should be used in a normal work cycle immediately.

Under no circumstances should the engine be allowed to idle for extended periods. Refer to: Starting the Engine (Page 44).

Multi-Purpose Switch

Direction Indicators

Push the stalk forwards to indicate a left turn. Pull the stalk backwards to indicate a right turn. Place in central position to cancel.

Front Windscreen Wiper

Rotate the switch barrel to activate and cancel the windscreen wipers. The wiper speed can vary dependant on machine specification.

The windscreen switch positions (marked on switch):

J - Intermittent wipe

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Torque Values

General

Body and Framework

Table 82.

Rear cab mounts	200N·m
Front cab mounts	160N·m
Fender mounts	79N·m

Hydraulics

Table 83.

Hydraulic/Auxiliary oil cap	20N·m
Hydraulic tank drain plug	20N·m

Axles

Table 84.

Drain plug	50N·m
Front axle track rod locknut	350N·m
Rear axle track rod locknut	250N·m

Wheels

Table 85.

Front/Rear wheel nuts	500N·m
Adjustable wheel rim track width trackwidth bolts	210N·m

Attachments

Table 86.

Swinging drawbar bolt	360N·m
Rear PTO bolted shaft	60N·m

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Technical Data
Static Dimensions

Dimensions

Figure 245.

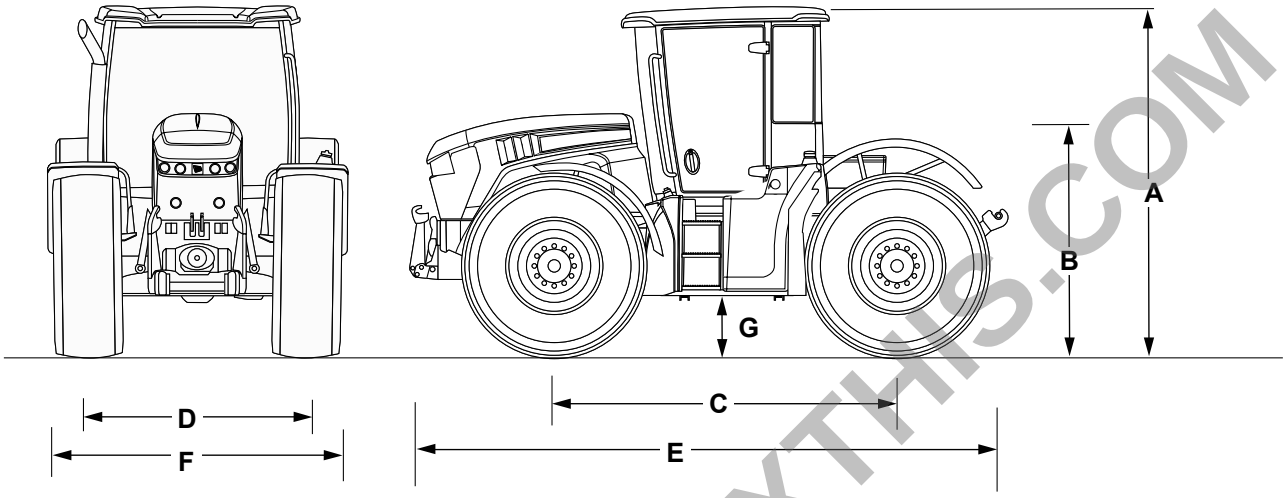


Table 68.

A	Height over cab (exc. Flashing beacon or GPS)	3m
B	Height to deck	1.67m
C	Wheelbase	2.98m
D	Track width	1,830mm/2,030mm reversed
		1,930mm/1,780mm reversed
		1,780mm - 1,830mm adjustable
E	Overall length	5.4m
F	Overall width	2.55m
G	Ground clearance	0.45m
Turning circle[1]		9.8m

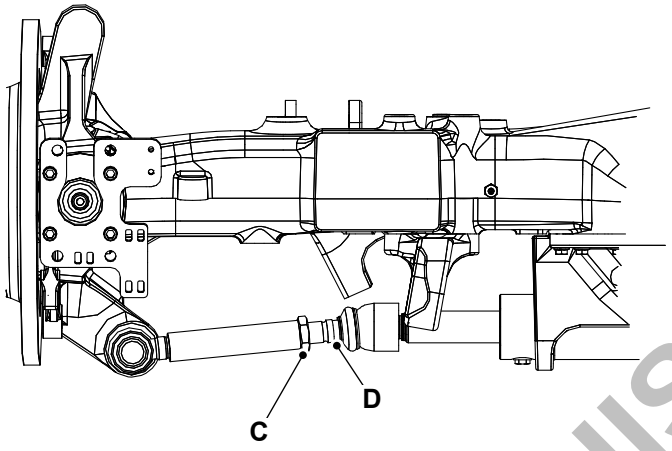
(1) On 540/65 R30 tyres in 4WS mode. Measured on outside wheel marks.

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1. If adjustment is necessary, slacken the locknut and rotate the threaded section.

Figure 221.



C Locknut **D** Threaded section

2. Retighten the locknut
   2.1. Front axle
   Torque: 350N·m
   2.2. Rear axle
   Torque: 250N·m
3. Repeat for all 4 wheels tracked straight ahead compared to the chassis.

Calibrate

This procedure will calibrate the fully left and fully right steering positions. This procedure cannot be used to calibrate the central position of the steering. If the central position of the steering has been altered then the machine will need to be calibrated by your JCB dealer..

Operator calibration should only be performed when:

- Changing front axle wheels/tyres which has required changing the lock stops and so affected the range of front steering.
- Changing rear axle wheels/tyres which has required changing the lock stops and so affected the range of front steering.
- Changing both front and rear axle wheels/tyres which has affected range of front and rear steering.

Operator calibration should not be performed to resolve the following:

- Following maintenance where, for example, a steering position angle sensor has been changed.
- Fault codes produced for out of calibration or range when the steering has not reached full extent.

It is possible to check whether the front steering steer extent would benefit from calibration prior to performing this procedure. Refer to the 'Calibration Check'

Check that operation calibration is required. If required, before each calibration session where the park brake is already applied, the park brake should be released, then reapplied, to allow any ‘wind up’ in the steering system and transmission to be released.

If a number of calibration attempts have been made where the machine is already parked on soft ground (e.g. soil or grass), it is possible for the wheels to ‘dig into’ the ground, preventing them reaching full extent. It is recommended that the machine be moved to a different location (or calibrated on a harder surface) to prevent this.

1. Start the engine.

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